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Iron Output Still Rising—Page 1613

IRON TRADE REVIEW

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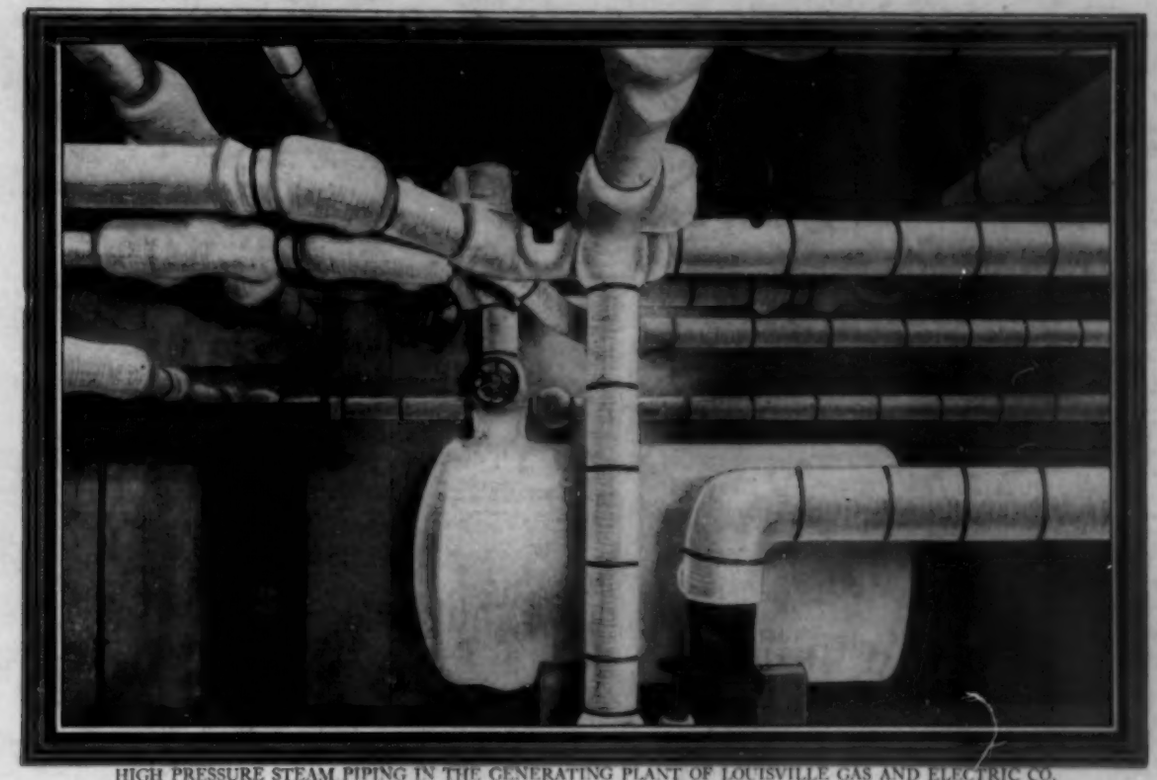

HIGH PRESSURE STEAM PIPING IN THE GENERATING PLANT OF LOUISVILLE GAS AND ELECTRIC CO.

ASSURING SAFE HIGH PRESSURE PLANTS

The use of Crane cast steel fittings and valves with high pressure superheated steam overcomes the "growth" or permanent expansion encountered with cast iron, malleable iron or semi-steel units, thus insuring permanently tight connections and maximum safety in all the piping equipment.

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GENERAL OFFICES: CRANE BUILDING, 836 S. MICHIGAN AVE., CHICAGO

Branches and Sales Offices in One Hundred and Thirty-five Cities
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Crane 75 Low Pressure Globe Valve

The Koppers Company's New Oven

Fifteen Years Ago— the by-product coke oven industry received an impetus from the introduction of a new oven that has carried it from comparative obscurity to a point where it is now recognized as one of the basic industries of the country.

Through its development, coal products worth billions of dollars have been saved and utilized for the benefit of the nation, creating new industries and broadening the scope of others.

The part played by the Koppers Company in this development is best expressed by the fact that out of a total of 9300 ovens built in the United States and Canada since 1908, when the first Koppers Ovens were built, 7196 or 88%, have been designed and built by this company.

Today— the Koppers Company's New Oven gives an even greater conception of the benefits to be derived from the by-product coke oven, establishing a standard of performance that far excels anything heretofore attained.

There are now built or building 408 ovens of this new design, as follows:

Chicago By-Product Coke Co., Chicago, Ill. . . .	5
Carnegie Steel Co., Clairton, Pa.	366
Weirton Steel Co., Weirton, W. Va.	37
Total	408

The Koppers Company

PITTSBURGH, PA.

IRON TRADE REVIEW
Registration Applied For
The Authority of Industry National and International
Vol. LXXI Cleveland, O., December 14, 1922 No. 24

Market Prospect More Favorable

New Business Equal to Shipments and Tonnage Carried Forward Gives Good Foundation for First Quarter—Production More Stationary—Prices Show Firmer Tendency—Belgian Steel Is Sold in Atlantic Coast District

NEW demands for iron and steel show up liberally and prospects for the first quarter of 1923 are promising. With a heavy tonnage already on mill books to be delivered next year a good foundation has been laid for the future steel market. Fresh tonnage at present is being taken in sufficient amount to replace shipments and this means at about the best rate in two years. A favorable aspect of the situation is the greater confidence which manufacturing consumers especially are displaying in obligating themselves for material for forward delivery at prevailing prices. In some cases they are not able to get on mill books for all the tonnage they wish to engage.

Some lines of finished steel where price softness has been marked appear firmer due to better bookings by certain mills. Plates especially show a narrower range and 1.90c Pittsburgh now appears minimum. A 2000-ton lot competed for by several makers went at 1.95c. Iron boiler tubes have been advanced $10 and steel tubes up to $16 per ton. Independent makers freely have sold semifinished steel this week at $36.50 Youngstown and Pittsburgh and the market now has been established at this point for first quarter following the action of the Carnegie Steel Co. in announcing such a price to its regular customers.

Lower pig iron and semifinished steel prices have caused another decline to $40.23 this week in IRON TRADE REVIEW composite of fourteen iron and steel products. This is the twelfth consecutive decline. Last week, the average was $40.69, two weeks ago $41.40.

Output Is Steady

Steel production continues on a more even keel around 80 per cent. Ingot output in November was practically unchanged, the gain over October being negligible. In November the country was making ingots at the annual rate of 39,495,000 tons which would represent 90.5 per cent of the record output in 1917. October operations were at the rate of 39,265,000 tons annually. This week gains in blast furnace and mill activities in the Chicago, Pittsburgh and the Wheeling districts offset some recent losses at other points.

New car inquiries this week have added 11,000 to the pending list as practically no new awards were made. The total now pending in the Chicago district is 45,000. Total sales of cars in the Chicago district this year to date have been 131,537 with those for the entire country, 157,216. New structural jobs this week total 16,000 tons. Orders and inquiries for transmission towers account for 6000 to 8000 tons.

Iron Sales Are Huge

Great activity in the pig iron market has carried forward this week and recent estimates of 1,000,000 tons being closed for first quarter now appear to be well within the facts. Much buying is yet to be done. Bookings in two weeks by leading sellers with headquarters in Cleveland alone are placed at 500,000 tons. Pittsburgh reports 80,000 to 100,000 taken there and in the valleys, Buffalo 50,000 tons additional, and New York, Boston, Cincinnati and Chicago, heavy amounts. Practically all the largest buyers have been active. The United States Cast Iron Pipe & Foundry Co. bought 50,000 tons of southern iron, a large Ohio foundry took 25,000 to 30,000 tons, a Depew, N. Y., plant 10,000 to 15,000 tons and 5000 to 10,000-ton purchases have been numerous. Heavy lots of gray forge have been taken by valley and Pittsburgh consumers. Steelmaking iron has played only a modest part but a Massillon, O., plant now is inquiring for 45,000 to 50,000 tons of basic.

Price concessions have applied to most of the business closed but now with heavy backlogs of orders various producers are quoting $1 above their recent low price. The market, however, has not yet regained steadiness and the lower quotations still prevail. Valley basic has gone at $24.25 with $24.50 still named.

Buy Foreign Steel

Fair sized sales of Belgian bars, hoops and bands have been made the past week in the New York district. These have been made at 2.10c duty paid on bars and 2.75c on hoops and bands or from $4 to $5 per ton under the domestic product delivered New York. This margin of difference, however, restricts the foreign competition to the immediate tidewater zone. American buying of British pig iron now is on a much smaller basis though foreign metal still has considerable price advantage along the eastern seaboard and on the Pacific Coast.

Business Trend and Chart Section Page 1621

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President's Message Is Progressive

TRANSPORTATION was accorded major attention by the President in his message to congress last Friday, and rightly so. Neither industry nor agriculture will rest upon solid foundation until the rate and equipment situations are adjusted, while the railroad executives themselves are restive.

The President's proposal to abolish the railroad labor board and transfer its functions to a labor division of the interstate commerce commission is a sop to the radical-farmer groups of the senate and house, which have been clamoring for the board's scalp. But the catch is that the President would have wage decisions affecting working conditions made binding, which is a primary demand of industry. Who makes the decisions is of less importance than the enforcement of them.

If the labor board is to continue, then the President would prefer leaving only the public group of three. As Secretary Hoover has stated repeatedly, the place for the advocates of the railroads and of railroad labor is before the bench and not upon it. The public group in every outstanding decision has been the deciding factor. None will question the recommendation that if the board is to remain it should be moved from Chicago to Washington; the organization that determines the major outgo of railroad funds should have contact with the organization that measures the railroad income.

Industry will acquiesce in any reasonable extension of rural credits, provided such credits are not extended too freely and to the injury of the whole business fabric. Industry cannot be healthy if agriculture is diseased. Industry likewise will applaud any move to correct abuses of enforcement of prohibition. Aside from the merits or demerits of prohibition, its flagrant flouting and weak enforcement have served to undermine respect for all law. Registration of aliens presents no menace to any class save undesirable aliens, but industry would have preferred a presidential recommendation broadening the restrictive 3 per cent act.

As a state paper, the President's message will take high rank. It reveals a trace of progressivism that is in keeping with the changing times. But it should not be forgotten that the present session of congress will adjourn in 11 short weeks, including the holiday season, and the President's message will have the effect more of an observation than of a command. So far as transportation is concerned, the elements that will probably serve to prevent a modification of the transportation act as industry would prefer will also prevent the act's disembowlment by the radical-farmer groups.

Beehive Coke Capacity Passing

ABANDONMENT of the beehive method of coke making in the United States, in favor of the by-product process, is further evidenced by the geological survey's report on beehive production in 1921. Besides a falling off of 73 per cent from the tonnage produced in 1920 which can be ascribed largely to change in business conditions, the statistics show a loss of 9284 in the number of beehive ovens in existence at the start of 1922. The total number of ovens as of that date was 66,014 which compares with 75,298 ovens available at the beginning of 1921 and 100,362 at the end of 1910. From 1910 the loss of ovens is 34,348. The 1920 decrease was 7262 and that of 1919, 2075 ovens.

As against this loss of beehive capacity, by-product ovens increased 7063 in the period from 1910 to 1921, a gain of 173 per cent. This made the total at the start of 1922, 11,141 ovens. The total production of by-product coke since 1918 has been in excess of that of beehive and the gap is steadily growing. With the gradual disuse of beehive ovens in other countries and their complete abandonment practically in Germany, the trend of development due to the superior economic value of the by-product method is more marked than ever. The

next decade seems likely to reduce the beehive capacity of this country to only a small fraction of its once dominating magnitude.

Selling Economics To Business

ALTHOUGH the idea is not new, close co-operation between engineers and economists has been of comparatively recent origin. The same might be said of manufacturers and a great many business men, who until the present period of readjustment, failed to appreciate the application of economic laws to every-day problems.

Fortunately there now is a strong tendency toward recognition of the part played by economics in industrial life. The trend in this direction was apparent at the joint meeting held last week by the American Society of Mechanical Engineers and the American Economic association, when engineers, manufacturers and economists met to discuss industrial problems. It was stated that lack of contact between these groups in the past was responsible for the misguided policies pursued in attempts to adjust labor, fix prices, provide revenue and administer banking control. Speaking of the present situation, one authority declared that business has not been "sold" on economics. He intimated that professors of economics in many cases have avoided opportunities to apply their teachings to practical problems on the ground that "to commercialize the science would destroy its cultural value."

Perhaps the fault for past aloofness should be charged equally to representatives of the academic and commercial groups. It is certain that too many educators have concealed the real value of economics by a camouflage of academic conservatism.

On the other hand, it cannot be said that the average man in a managerial or executive position had been receptive to the use of economics in his daily routine until recently, when under the persuasive influence of a business depression, he turned to charts, statistics, etc., and has studied cycles and other phenomena of business as never before.

Equipment Demand Is Promising

EXPANSION both actual and contemplated, in the productive capacity of the steel industry as well as that of other lines of industrial activity is being very forcibly brought out by the trend of business in the equipment industry. Perhaps no industry was so hard hit by the business depression as the equipment field. Reason for a lack of demand was obvious. No one wanted new machinery when their existing shop facilities were standing idle. The shop equipment builders were obliged to await a turn for the better in the general industrial situation when once more the need for plant betterments would reappear.

It was a long wait and expensive, but the turn came at last. Since September there has been a notable increase in interest in crane equipment. The crane market is peculiarly sensitive to changes in industrial construction. Orders placed in the past three months have exceeded those for the past year. Plant expansion projects, which had been retired, have been revived and many new proposals brought forward with a resulting need for conveying equipment. New inquiries for cranes for replacement purposes are coming into the market as well from users who are enlarging plant facilities. Crane demand from the steel industry is large if the numerous steelworks expansion projects, which are either under way or soon are to be, are considered. It must be remembered, crane orders are but a measure of the demand for other types of equipment. There has been but little buying of production machinery in metalmaking lines in the past two years. Old equipment is worn out and must be replaced, new projects are being born, and as 1922 comes to an end the outlook for a heavy demand for cranes and other shop equipment is much brighter. The equipment builder today is justified in his feeling which he now frequently expresses in words that his troubles are nearing an end and that the future is more promising for him than it has been for several years past.

Sales Staffs

Could Follow Business Trend Section with Profit, Manager Says

AS WE are much concerned with the purchasing power of the farmer's dollar, we are following with intense interest the "Farm Purchasing Power Charts" appearing in IRON TRADE REVIEW. We believe that it would be a great aid to our representatives if they too could follow the information as furnished in your publication. Consequently, we are asking for your kind permission to reproduce on an enlarged scale the chart as it appeared in the Nov. 2 issue and display same in our booth at the Wisconsin Implement Dealers Convention at Milwaukee, Dec. 5 to 8 included.—*Lewis Owens, manager, Stevenson Barn Equipment Co., Barton, Wis.*

We find IRON TRADE REVIEW to be very valuable in helping us to keep in touch with the market conditions throughout the country. Our purpose in taking IRON TRADE REVIEW is to keep in touch with trade conditions and the trend of the market.—*Ira I. Paddock, division sales agent, Colorado Fuel & Iron Co., Denver, Colo.*

The chart section of IRON TRADE REVIEW is a distinct advance. It strikes the writer that the insertion of the chart each week is a mighty instructive thing. —*L. F. Hamilton, manager, sales promotion department, Walworth Mfg. Co., Boston.*

Composite Market Average

Representing the Combined Average Prices per Ton of Fourteen Leading Iron and Steel Products, Yesterday, One Week, One Month, Three Months, One Year and Nine Years Ago

December 13, 1922	December 6, 1922	November, 1922	September, 1922	December, 1921	December, 1913
$40.23	$40.69	$42.08	$43.79	$33.99	$23.29

Products Included Are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

SCRAP PRICES, PAGE 1666, WAREHOUSE, PAGE 1658, ORE, NUTS, BOLTS AND RIVETS AND PIPE PRICES, PAGE 1662

Iron and Steel Prices

Pig Iron

Bessemer, valley	$29.00 to 30.00
Bessemer, Pittsburgh	30.77 to 31.77
Basic, valley	24.50 to 25.00
Basic, Pittsburgh	26.27 to 26.77
Basic, Buffalo	26.00
Basic del., eastern Pa.	27.50 to 28.00
Malleable, valley	25.00 to 26.00
Malleable, Pittsburgh	26.77 to 27.77
Malleable, Chicago	28.00
Malleable, Buffalo, furnace	25.50 to 26.50
Malleable, del., eastern Pa.	28.00 to 29.00

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X East'n and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 to 3.25
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern del., Phila.	30.13 to 30.26
No. 1X, Buffalo	26.00 to 27.00
No. 2 foundry, valley	26.00
No. 2 foundry, Pittsburgh	24.50 to 25.00
No. 2 foundry, Buffalo	25.00 to 26.00
No. 2 foundry, Chicago	28.00
No. 2 foundry, Granite City	29.00 to 30.00
No. 2 foundry, Ironton furnace	27.00
No. 2 foundry, Cleveland del.	26.00 to 26.50
No. 2 foundry, del., Phila.	27.76 to 28.26
No. 2 foundry, N. J. tidewater	28.28 to 28.64
No. 2X, eastern del., Phila.	28.76 to 29.26
No. 2X, east. N. J. tidewater	28.78 to 29.64
No. 2X, eastern del., Boston	30.65 to 31.65
No. 2X foundry, Buffalo fur.	25.50 to 26.50
No. 2X, Buffalo del. Boston	30.41 to 30.91
No. 2 southern, Birmingham	22.50 to 24.00
No. 2 southern, Cincinnati	26.55 to 28.55
No. 2 southern, Chicago	27.51 to 29.01
No. 2 southern, Philadelphia	30.30 to 31.80
No. 2 southern, Cleveland	28.51 to 30.01
No. 2 southern, Boston (rail)	32.11 to 33.61
No. 2 southern, St. Louis	27.17 to 28.17
No. 2X, Virginia furnace	27.50
No. 2X, Virginia Phila.	32.67
No. 2X, Virginia Jersey City	33.04
No. 2X, Virginia Boston	33.42
Gray forge, eastern Pa.	28.00
Gray forge, val. del.	26.77
Low phos., standard, valley	36.00 to 37.00
Low phos., standard, Phila.	Nominal
Low phos., Lebanon furnace	30.00
*Low phos. British tidewater	28.00
Charcoal, Birmingham	32.00 to 33.00
Charcoal, Superior, Chicago	36.15

Silvery Iron
Jackson County, Ohio, furnace

8 to 9 per cent	$35.50
9 to 10 per cent	37.50
10 to 11 per cent	39.50
11 to 12 per cent	42.00
12 per cent	44.50
13 per cent	47.00

Bessemer Ferrosilicon
Jackson County, Ohio, furnace

10 to 11 per cent	$44.50
11 to 12 per cent	47.80

Ferroalloys

Ferromanganese, 78 to 82 per cent domestic, f.o.b. furnace	$100.00
Ferromonganese, delivered, Pittsburgh	104.79 to 104.91
†Ferromanganese, 79 per cent, English, c.i.f. Atlantic port	100.00 to 100.68
Spiegel, 19 to 21 per cent furnace spot nominal	35.00 to 36.00
†Spiegel, 20 per cent English, c.i.f. Atlantic port	nominal
Ferrosilicon, 50 per cent contract freight allowed	82.50 to 85.00
Ferrotungsten, standard, per pound contained	90.00 to 95.00

†Duty paid.

Ferrochrome, 60 to 70 chromium, 4 to 6 carbon, per pound contained, makers plant	13.00c to 14.00c
Imported ferrochrome, 4 to 6 per cent carbon	12.00c to 12.50c
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	$3.50 to $4.00
Ferro carbon-titanium, carloads, producers plant, per net ton	$200.00

Coke

Beehive, Ovens

Connellsville furnace	$6.25 to 6.75
Connellsville foundry	7.50 to 8.00
Pocahontas furnace	nominal
Pocahontas foundry	nominal
New River furnace	9.00 to 10.00
New River foundry	12.00
Wise county furnace	6.00 to 7.00
Wise county foundry	7.00 to 8.00
Alabama furnace	7.00 to 8.00
Alabama foundry	7.50 to 8.50

By-Product

Foundry, Newark, N. J., del.	$12.84 to 12.91
Foundry, Chicago, ovens	15.00
Foundry, Boston, delivered	16.00
Foundry, Granite City, Ill., ovens	14.00
Foundry, Alabama	8.00 to 8.50

Semifinished Material

BILLETS AND BLOOMS
(4 x 4-inch)

Open-hearth, Pittsburgh	$36.50
Open-hearth, Youngstown	36.50
Open-hearth, Philadelphia	43.17 to 45.17
Bessemer, Pittsburgh	36.50
Bessemer, Youngstown	36.50
Forging, Pittsburgh	45.00 to 47.50
Forging, Philadelphia	47.67 to 50.17

SHEET BARS

Open-hearth, Pittsburgh	$36.50
Open-hearth, Youngstown	36.50
Bessemer, Pittsburgh	36.50
Bessemer, Youngstown	36.50

SLABS

Pittsburgh and Youngstown	$36.50

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$45.00 to 47.50
Grooved skelp, Pittsburgh	2.00c
Universal skelp, Pittsburgh	2.00c
Sheared skelp, Pittsburgh	2.00c

Shapes, Plates and Bars

Structural shapes, Pittsburgh	1.90c to 2.00c
Structural shapes, Phila.	2.225c to 2.325c
Structural shapes, New York	2.24c to 2.34c
Structural shapes, Chicago	2.10c to 2.20c
Tank plates, Pittsburgh	1.90c to 2.00c
Tank plates, Philadelphia	2.225c to 2.325c
Tank plates, New York	2.24c to 2.34c
Tank plates, Chicago	2.10c to 2.30c
Bars, soft steel, Pittsburgh	1.90c to 2.00c
Bars, soft steel, Philadelphia	2.275c to 2.325c
Bars, soft steel, New York	2.29c to 2.34c
Bars, soft steel, Chicago	2.00c to 2.10c
Bars, forging, Pittsburgh	2.60c to 2.75c
Bars, rail steel, Chicago	2.00c
Reinforcing bars, Pittsburgh	1.90c to 2.00c
Bar iron, common, Phila.	2.275c to 2.325c
Bar iron, common, New York	2.29c to 2.34c
Bar iron, common, Chicago	2.35c to 2.50c

Hoops, Bands, Shafting

Hoops, Pittsburgh	2.75c to 2.90c
Bands, Pittsburgh	2.75c to 2.90c
Cotton ties, per bundle Pitts.	$1.15
Cold finished steel bars, Pittsburgh base	2.50c
Steel shafting	2.50c

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open hearth rails, mill	43.00
Relaying rails, St. Louis	27.00 to 31.50
Relaying rails, Pittsburgh	28.00 to 32.00
Light rails, 25 to 45, mill	2.00c to 2.15c
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.75c to 2.85c
Spikes, small and boat Pitts.	3.50c to 3.75c
Spikes, railroad, Chicago	2.85c to 3.00c
Track bolts, Pittsburgh	3.85c to 4.00c
Track bolts, Chicago	3.85c to 4.00c
Tie plates, Pittsburgh	2.35c to 2.50c
Tie plates, Chicago	2.35c

Wire Products

100 lbs. to Jobbers in Carloads

Wire nails, Pittsburgh	2.70c
Plain and annealed wire, Pitts.	2.45c
Galvanized wire, Pittsburgh	2.95c
Barbed wire, painted, Pitts.	2.85c
Barbed wire, galv., Pittsburgh	3.35c
Polished staples, Pittsburgh	2.85c
Galvanized staples, Pittsburgh	3.35c
Coated nails, count keg, Pitts.	2.20c
Woven wire fencing (retailers)	68 off
Woven wire fencing (jobbers)	70½ off

Chain, Piling, Strip Steel

Chain, 1-in. proof coil, Pitts.	6.00c
Sheet piling base, Pittsburgh	2.00c to 2.05c
Hot rolled strip steel, Pittsburgh stamping quality	2.75c to 2.90c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, base	4.50c

Sheets

SHEET MILL BLACK

No. 28, open-hearth, Pittsburgh	3.25c to 3.35c
No. 28, bessemer, Pittsburgh	3.25c to 3.35c
No. 28, open-hearth, Phila.	3.575c to 3.675c
No. 28, open-hearth, Chicago	3.59c to 3.69c

TIN MILL BLACK

No. 28, open-hearth, Pittsburgh	3.35c
No. 28, open-hearth, Chicago	3.69c

GALVANIZED

No. 28, open-hearth, Pittsburgh	4.35c
No. 28, bessemer, Pittsburgh	4.35c
No. 28, open-hearth, Phila.	4.675c
No. 28, open-hearth, Chicago	4.64c to 4.69c

BLUE ANNEALED

No. 10, open-hearth, Pittsburgh	2.50c to 2.60c
No. 10, bessemer, Pittsburgh	2.50c to 2.60c
No. 10, open-hearth, Phila.	2.825c to 2.925c
No. 10, open-hearth, Chicago	2.84c to 2.89c

AUTOMOBILE SHEETS

No. 22 Pittsburgh	4.70c to 5.00c

Tin Plate

Per 100 lb. box.

Tin plate, coke base, Pitts.	$4.75

Iron and Steel Pipe

Base Discounts Pittsburgh to Jobbers in Carloads

	Black	Galv.
1 to 3-inch, butt steel	66	54½
1 to 1½-inch, butt iron	34	19

Boiler Tubes

Carload Discount 4 Points Larger

Steel, 3¼ to 13 inches, l. c.	48 to 40 off
Charcoal iron, 3¼ to 4½ inches l. c. l.	11 off
Seamless rot rolled, 3¼ to 4-in., l. c. l.	45 off

Cast Iron Water Pipe

Class B Pipe

Four-inch, Chicago	$55.20 to 56.20
Six-inch and over, Chicago	51.20 to 52.20
Four-inch, New York	60.30
Six-inch and over, New York	55.30
Four-inch, Birmingham	47.50 to 48.00
Six-inch and over, Birmingham	43.00 to 43.50
Three-inch, Birmingham	56.50 to 57.00

Class A pipe is $4 higher than Class B. Standard fittings, Birmingham, base, $110.00 6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Prices Present and Past

Representative market figures yesterday, and for last month, three months ago and one year ago

	Dec. 13, 1922	Nov. 1922	Sept. 1922	Dec. 1921
PIG IRON				
Bessemer, valley, del., Pitts.	$30.77	$33.77	$35.27	$21.96
Basic valley	24.50	29.77	34.27	20.61
*No. 2 foundry, del. Pittsburgh	26.27	30.17	37.02	22.26
*No. 2 foundry, Chicago	28.00	30.60	32.00	20.00
Lake Superior charcoal, Chicago	36.15	36.15	36.15	31.50
Malleable, valley	25.00	29.60	34.00	20.00
Malleable, Chicago	28.00	30.60	32.00	20.00
*Southern No. 2, Birmingham	22.50	24.00	26.25	17.15
*Southern Ohio, No. 2, Ironton	27.00	29.25	33.75	20.00
Basic eastern del., eastern Pa.	27.65	28.00	30.00	20.80
**No. 2X, Virginia furnace	27.50	31.40	33.00	22.50
**No. 2X, eastern del. Phila.	28.76	30.50	34.25	22.00
Gray forge val. del., Pittsburgh	26.77	29.77	36.02	21.36
Ferromanganese, del., Pittsburgh	104.91	104.91	80.59	60.00
SEMIFINISHED MATERIAL—				
Sheet bars, bessemer, Pittsburgh	36.50	38.80	39.50	30.00
Sheet bars, open-hearth, Pittsburgh	36.50	38.80	39.50	30.00
Billets, bessemer, Pittsburgh	36.50	38.80	39.50	29.00
Billets, open-hearth, Pittsburgh	36.50	38.80	39.50	29.00
FINISHED MATERIAL				
Steel bars, Pittsburgh	**2.00**	2.00	2.00	1.50
Steel bars, Chicago	**2.00**	2.00	1.98	1.60
Steel bars, Philadelphia	2.325	2.325	2.375	1.85

	Dec. 13, 1922	Nov. 1922	Sept. 1922	Dec. 1921
FINISHED MATERIAL Continued				
Iron bars, Philadelphia	$2.275	$2.325	$2.325	$1.85
Iron bars, Chicago mills	2.35	2.50	2.25	1.65
Beams, Pittsburgh	1.90	2.00	2.00	1.50
Beams, Philadelphia	2.275	2.325	2.375	1.85
Beams, Chicago	2.10	2.10	2.08	1.65
Tank plates, Pittsburgh	1.90	2.00	2.20	1.50
Tank plates, Philadelphia	2.275	2.325	2.575	1.85
Tank plates, Chicago	2.10	2.10	2.08	1.60
Sheets, blk., No. 28, Pittsburgh	3.25	3.35	3.40	2.95
Sheets, blue anl., No. 10, Pitts.	2.50	2.60	2.50	2.25
Sheets, galv., No. 28, Pittsburgh	4.35	4.35	4.40	3.95
Wire nails, Pittsburgh	2.70	2.70	2.70	2.75
COKE—				
Connellsville furnace, ovens	6.25	7.10	11.00	2.80
Connellsville foundry, ovens	7.50	8.40	12.75	4.00
OLD MATERIAL—				
Heavy melting steel, Pittsburgh	20.00	20.40	19.50	14.25
Heavy melting steel, east. Pa.	16.25	16.70	17.10	11.90
Heavy melting steel, Chicago	16.75	17.40	18.15	11.35
No. 1 wrought, eastern Pa.	19.00	21.20	21.25	15.75
No. 1 wrought, Chicago	17.00	18.10	19.95	12.10
Rails for rolling, Chicago	17.75	18.90	19.40	12.90

*1.75 to 2.25 silicon **2.25 to 2.75 silicon

Pig Iron Sales Reach Large Total

General Buying Continues in All Districts—Consumers Close for Round Tonnages—Pipe Works Take 50,000 Tons—Concessions Generally Appear but Some Makers Now Quote Higher—Valley Basic Breaks Through $25

Chicago, Dec. 12.—Heavy selling of pig iron in lots of a few hundred tons to several thousand continues, the aggregate being fully equaly to one-half of the first quarter production in this district. All melters are seeking iron, and much is yet to be bought. There are some requests for contracts for the first half, but fuel uncertainty prevents makers quoting that far ahead. The market now is firm at $28, Chicago furnace, and an advance is expected shortly, as farther tonnages are being chosen by sellers. Lots of 10,000, 15,000 and 20,000 tons have been closed. Fully 40,000 tons of iron is actively on inquiry at the moment, and more is coming out each day. Milwaukee melters are inquiring for 10,000 tons. One Milwaukee user has bought 5000 tons of foundry and malleable, and another 1500 tons of malleable. Chicago users are inquiring for 1800 tons each, and a third for 3000 tons. An Indiana user is asking for 7500 tons. A furnace maker has bought 5000 tons. Lake Superior charcoal iron is unchanged. There is no demand. Inquiries are noted for 1500 tons and 400 tons of low phosphorus iron. The sale of 1000 tons is reported. Low phosphorus iron is quoted $37, delivered, with imported material $1 less. Ferromanganese is $108.66, delivered. Spiegeleisen is $45, delivered. The sale of 200 tons of silveries at $35.50, for 3 per cent. Jackson County furnace is noted.

Buying Reported Fair

Philadelphia, Dec. 12.—Fair buying of pig iron was done here last week but the volume of buying was by no means comparable with the business done in the New York and New England districts. The leading purchase was by the Westinghouse Electric & Mfg. Co., which placed about 2500 tons with four sellers. Several lots ranging from 500 to 1000 tons each were placed. Some business was done in foundry iron the past week slightly under $27 eastern Pennsylvania furnace for No. 2 plain (1.75 to 2.25 silicon) and under $28 for No. 2X (2.25 to 2.75 silicon) to compensate for freight disadvantages. The figures indicate the current market prices. Some carload business was done at $28 base furnace. Considerable foreign foundry iron was sold at prices ranging from $25 to $26 duty paid, depending upon phosphorus, sulphur, size of tonnage and delivery. Foreign material equivalent to American standard foundry can be placed in large blocks at $24.50 to $25, duty paid. Virginia iron now is selling at $27 base furnace plus 50-cent differentials for silicon. Alabama foundry is quoted at $23 Birmingham but less could be done on attractive tonnages. The Cranberry furnace in Tennessee is expected to go in blast on copper free low phosphorus iron about Jan. 1. The price of this grade is $35 furnace. The Ingersoll Rand Co., Easton, Pa., is inquiring for 500 to 600 tons for January delivery.

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Estimated Bookings Are Large

Pittsburgh, Dec. 12.—Various estimates of pig iron bookings in the Pittsburgh and valley districts during the past week or 10 days place the amount between 80,000 and 100,000 tons. Several additional lots are being closed, including 2000 tons of foundry for the United Engineering & Foundry Co.; 1500 tons for the Westinghouse Air Brake Co.; 1000 tons of malleable for a nearby con-

sumer; 45,000 to 50,000 tons of basic for the Central Steel Co.; and various other lots. The Follansbee Bros. Co. bought 4000 tons of basic; Allegheny Steel Co. closed on 3000 tons of basic with a western Pennsylvania steelmaker at $25 furnace, with the same freight rate to Brackenridge, Pa., as from the valley, $1.77; and the Sharon Steel Hoop Co., 500 tons of basic at $25, valley. Some basic recently was taken as low as $24.50 valley, due to an equalization of freight rates. While a valley steelmaker now is understood to have named that figure on a 50,000-ton lot for a nearby consumer, $25 valley is minimum on smaller tonnages. The Valley Mould & Iron Corp. purchased 1000 tons of bessemer at $29, Johnstown, Pa., and another 1000-ton lot went to a Pittsburgh melter at the same figure. On 1000 tons of malleable $25, valley, and $25, f.o.b. Pennsylvania furnace, with $1.77 freight rate was quoted. The Standard Sanitary Mfg. Co. has closed on 5000 tons of foundry iron with one producer at $25, valley, and will buy more. One Pittsburgh maker is quoting $24.50, valley. Others are naming $25, valley and recently one valley interest has booked upward of 20,000 tons at the $25 figure. The Cambria Steel Co. has advanced $1 to $26 f.o.b. Johnstown for No. 2. The Westinghouse Electric & Mfg. Co. has closed on several thousand tons with at least three producers for Trafford City, Pa., Springfield, Mass., and Cleveland. Another buyer placed 3000 tons of No. 2 and No. 3 iron and the Mesta Machine Co., 750 tons. One user contracted for 7000 tons of gray forge at $25, valley. Sales involving 100 to 500 tons each have been numerous.

Sales Heavy; Market Firmer

Cleveland, Dec. 12.—Buying of pig iron has proceeded on an active scale, and two lake furnace interests which have acquired good backlogs. Some leading sellers with headquarters in Cleveland place the tonnage booked in the last two weeks by them and their competitors as not less than 500,000 tons. A great number of consumers in Michigan, Indiana, Ohio and western New York have closed for their first quarter requirements. The bulk of this tonnage is represented by business done with Detroit, Toledo and Buffalo furnaces. More activity is noted in the valley, and Cleveland foundries have been covering, but apparently a great deal of business still remains to be transacted in this city. Cleveland sales in the last week amounted to something like 20,000 tons, as near as can be determined, including some iron shipped in from outside furnaces. One Cleveland interest is quoting $27, furnace, for delivery in Cleveland, and $26, furnace for outside shipment, though the latter figure it is believed could be shaded on attractive tonnage. Another Cleveland furnace is quoting $26.50, furnace, for delivery in the city. West of Cleveland lake furnaces have raised their base price to $27 to $27.50, representing an advance of $1 in the week. A Cleveland foundry closed for 1000 tons in the week at $26, delivered. A price of $25, Cleveland furnace, was quoted by a maker on a lot for shipment outside. Two lots of foundry

Extended Statistics of American Iron and Steel Production and Ingot and Casting Output, page 1664

iron, 1000 tons and 300 tons, respectively, were sold in Mansfield, O., in the week, and on one of these a price of $25.50, Cleveland furnace, was named. A Cleveland furnace quoted $25, valley basis, for shipments outside this district, and booked around 7000 to 8000 tons at this figure. The rising tendency was shown by the subsequent refusal of the maker to accept several thousand tons at $26, Cleveland furnace, for shipment west. One of the lake interests in that direction which advanced its price in the week to $27, furnace, booked 15,000 to 16,000 tons at the higher level. This interest now quotes $27.50 to $28, furnace. Dodge Bros., Detroit, closed for 3000 to 5000 tons last week when the price was around $26. The Westinghouse Electric & Mfg. Co., has purchased 1200 tons for Trafford City, Pa. Several manufacturing interests in Cleveland have placed sizable tonnages. The Link-Belt Co. is inquiring for 3000 tons of iron for January-February for Indianapolis. A local inquiry is current for 600 tons of 3 per cent silicon iron. Some negotiations for basic iron are noted, but no sales are reported.

A large Ohio buyer in the week was the purchaser of 25,000 to 30,000 tons of foundry and malleable grades for first quarter delivery.

Many Heavy Tonnages Closed

New York, Dec. 12.—Pig iron business now is being entered on a large scale for first quarter. Some of the larger sellers have entered a larger tonnage in the past week than in any similar period in several years. Due to much quiet buying, it is difficult to estimate the total. The Draper Co., Hopedale, Mass., closed for 8000 tons. The Saco-Lowell Shops are understood to have placed 3000 tons. The H. B. Smith Co., Westfield, Mass., has an additional 3000 tons under negotiation. The Thatcher Furnace Co., Newark, is inquiring and this company as a rule buys from 2000 to 3000 tons. The Burnham Boiler Corp., which recently bought 500 tons of foreign iron, has bought an additional 1400 tons, partly domestic and partly foreign. The Worthington Pump & Machinery Corp. bought about 5000 tons, mainly from the Buffalo district. The Worthington company still is in the market for some tonnage for the West. The Central Foundry Co. purchased about 5000 tons for eastern plants and at least 5000 tons more in the Alabama district. The Essex Foundry Co., Newark, purchased 2500 tons of foundry. The Gould Coupler Co., Depew, N. Y., is understood to have purchased 10,000 tons of basic and 2000 to 3000 tons of malleable. The General Electric Co. figured on several thousand tons, but as far as known, no definite action has been taken. The Eastern Malleable Iron Co. is inquiring for an additional 1000 tons of malleable. The American Car & Foundry Co. wants 1000 tons of foundry and 300 to 400 tons of malleable. The Massey Harris Harvester Co., Batavia, N. Y., will buy about 1000 tons. The Crane Co., Bridgeport, is in the market for 500 to 1000 tons. The Brown & Sharpe Mfg. Co., Providence, has purchased 1000 to 1500 tons.

In some instances, $26 base now is quoted on Buffalo foundry but the latter still can be had at $25 base. Buffalo malleable has sold at $25. Eastern Pennsylvania foundry has sold at $26.50 to $27.50 base furnace, plus $1 silicon differentials, but now is firmer. Prices on foreign iron recently dipped and English and continental foundry has gone as low as $24.50 duty paid, tidewater. On account of the advance in exchange, however, it now is difficult to shade $25.50. English low phosphorus is selling at $28 to $28.50 duty paid, tidewater.

Virginia foundry has been offered at $27 base furnace, plus 50-cent silicon differentials. This is a $1 reduction.

Northern Prices Stiffen

Boston, Dec. 12.—Sales during the past week fell off appreciably as compared with the heavy bookings of the previous week and this seems to indicate that first quarter requirements are more nearly covered than had been supposed. The impression that domestic iron prices have reached rock bottom is gaining throughout New England and this is strengthened by the recent advance of one of the principal Buffalo interests to a $26 furnace base from $25. This interest is quoting $26 for No. 2 plain and No. 2X silicon 1.75 to 2.25 and silicon 2.25 to 2.75, respectively and $26.50 for No. 1X, (2.75 to 3.25 silicon) and $1 premium for each additional 50 silicon points above No. 1X. Sales by Boston dealers the past week total approximately 14,000 tons made up mostly of small lots. The largest buying was by a textile machinery interest which took 8000 to 10,000 tons.

A pump manufacturer wants 3000 tons of foundry iron. Foreign iron continues at low prices for points near Boston and New York and between 2000 and 3000 tons of imported iron were sold. Receipts of iron at the port of Boston during the week totaled 2100 tons.

Buffalo Market Is Firmer

Buffalo, Dec. 12.—Another total of approximately 50,000 tons of pig iron has been sold in this district since the last report. The price is said to have been $25 base for most of this iron, but following the burst of selling, a stiffening of the market has set in and it is difficult now to find any quotations under $26. One interest announces $26 for No. 2 plain, (1.75 to 2.25 silicon); $26-$26.50 for No. 2X (2.25 to 2.75 silicon) and $26.50 for No. 1X (2.75 to 3.25 silicon). Another interest announces it is on a $26, $27 and $28 basis. Furnaces will not sell beyond March 31. Inquiry the past few days amounted to 20,000 to 25,000 tons.

Pipe Companies Buy Heavily

Cincinnati, Dec. 12.—The United States Cast Iron Pipe & Foundry Co. has closed for 50,000 tons of Pioneer iron, it has became definitely known, and it is reported that an additional 25,000 tons is pending. Other pipe manufacturers are inquiring and the indications are a considerable buying movement by this

group of consumers is about to be inaugurated. There is a growing activity in southern iron in this market but sales by southern Ohio furnaces are noticeably small. The Michigan Stove Co. closed in the week for 1500 tons southern, below $22, Birmingham, and stove foundries at Kokomo, Indianapolis and Columbus, O., have bought 1000, 500 and 250 tons respectively. A Cincinnati melter placed an order for 300 tons and another for 200 tons. Lots of 500, 400, 300, 250 and 200 tons have been sold to nearby consuming points. Two round tonnage lots were purchased by consumers west of the Mississippi river. The largest local orders placed during the past week were 2000 tons for the Elmwood Castings Co. and 1500 for the Williamson Heating Co. First quarter bookings in the past five days represent greater tonnage than the total sold for that period up to that time.

Inquiries are increasing daily both in numbers and tonnage. The Standard Sanitary Co. is in the market for 4000 tons of southern, and Ohio melter wants 1000 tons of northern foundry. Other pending negotiations are for 2000 tons for Chattanooga, 1000 tons for Kalamazoo, 1000 and 500 tons for Kokomo and scattering lots of 100 and up to 300 tons.

Southern Ohio furnaces are quoting $27, Ironton base and the southern market appears to have a spread from $22.50 to $24, Birmingham. One furnace is maintaining an open quotation of $22.50, at which it is booking first quarter deliveries, but others are holding at $23.50 and $24. At least one furnace is quoting $25 firmly for delivery after December.

St. Louis Market Active

St. Louis, Dec. 11.—A fair amount of activity is noted in the market for pig iron in this district. During the past several days larger tonnages have been placed for prompt and first quarter delivery than during the three weeks preceding. Firmer tone is noted. Southern iron which sold recently as low as $21 now has a minimum of $23, and two of the most important producers are holding for $25. Northern iron is stronger. Furnaces which during the last two weeks took business at $27 and under, are now firm at $28.

The St. Louis Coke & Chemical Co. reports total sales of 20,000 tons, a liberal portion of which was for first quarter delivery. A nearby Illinois melter purchased 800 tons of malleable, and a northern Illinois interest took 3000 to 6000 tons of malleable and foundry.

Southern Market Stronger

Birmingham, Ala., Dec. 11.—Southern furnace companies are selling pig iron for delivery during the first quarter. At a range of $23 and $25, lower quotations having disappeared. The withdrawal from the market of smaller companies which have sold at $21 is noted. The larger companies have no iron at that price. One company with two furnaces in blast has sold lots of 500 tons each at $24, and some tonnage at $23. Larger makers still ask $25, and report a few sales. Furnace interests here express the opinion that $23 is going to be the minimum on pig iron for the first half of 1923. Only a few inquiries have come in for delivery beyond the first quarter and no sales have been made beyond March.

Coke Sellers Are Cautious

Naming Higher Figures on First Quarter Supplies—Spot Furnace Fuel $6.50 to $6.75—Foundry Grade Selling at $7.50

COKE PRICES, PAGE 1600

Pittsburgh, Dec. 12.—Interest in beehive furnace coke for the first quarter is awakening, although few transactions for that period have been consummated. Recent sales are for consumers' needs to the end of the year, coke producers apparently being reluctant to name a figure as far ahead as March 31, with the possibility of another coal strike next spring. Coke producers are naming figures for first quarter supplies which are 25 to 50 cents per ton higher than the spot market level, suggesting $7 to $7.50 for the first three months of 1923. In the spot market, however, several blocks of coke from 2000 to 6000 tons each of 48-hour fuel have been purchased at $6.50 and $6.75. Since the minimum figure of $6.25 still is available in one or two directions the full spread of the market is unchanged at the level reached one week ago, $6.25 to $6.75. If contracts now in process of negotiation are closed this week at the figures proposed by sellers, the minimum will probably be raised and the $7 figure again will appear. One valley pig iron interest's arrangement for coke, which has applied for two or three months past, will continue over 1923. This is understood to be a sliding scale. Some special brands of standard selected hand-drawn 72-hour coke still are selling at $8.50, Connellsville ovens, and five or six carloads were disposed of by one interest on that basis late last week. The general market, however, remains at $7.50 to $8 although brokers are paying below that minimum. Any sales to consumers under $7.50 usually involve coke of uncertain character for cupola use. Heating coke continues to sell at $5 to $6 depending upon the sulphur content. A cessation of operations at one or two coke plants because of the curtailed demand brought about through the blowing out of two blast furnaces for repairs is reflected in the production figures for the Connellsville region. For the week ended Dec. 2, the *Connellsville Courier* estimates that 193,770 tons were produced as compared with 201,100 tons the preceding week.

Foundries Buy Beehive

Boston, Dec. 12.—Demand for foundry coke has fallen off slightly after the heavy requests for shipment at the first of the month. Commercial and domestic coke is, however, in stronger demand than ever because of cold weather. The by-product foundry coke price on contract still holds at $16, delivered to New England points, in the face of declining Connellsville prices. Beehive coke has recently been offered the New England trade at figures close to $13, delivered on first half contract. Several sales of spot foundry beehive coke have been made in Connecticut at prices between $14 and $14.50, delivered.

Offers Foundry Coke at $7.50

New York, Dec. 12.—Fair business is being done in spot foundry coke at prices ranging from $7.75 to $8.50, Connellsville. One maker has named $8.50, Connellsville, for the first quarter, but is willing to book contracts for the entire first half at $7.50. Some business has been closed on this basis, both for first quarter and first half. The Seaboard By-Products Coke Co. continues to quote $12.84 to $12.91, delivered, at Newark and other northern New Jersey points, for standard by-product foundry coke, but this interest is behind on its schedule and is taking care only of its regular customers.

Market More Active

Cincinnati, Dec. 12.—Coke consumption is increasing and there is a material gain in demand and inquiry, though shipments again are being held back. The car shortage is general at all ovens, but particular difficulty in obtaining cars for loading is reported in Wise county. A number of blast furnaces have either issued first and second quarter specifications, or are about ready to do so, and there is an increase in foundry consumption. So far as reported none of the furnaces which recently asked for quotations has closed for any considerable tonnage. A number of substantial foundry orders are being placed. One local dealer in two days booked miscellaneous orders aggregating 5000 tons of foundry coke and closed two contracts for 6000 and 8000 tons. Another booked new business totaling 12,000 tons, including a contract for 4000 tons for delivery up to March 1. The National Cash Register Co. has closed for 250 tons and a local consumer has contracted for 30 carloads.

Shipments from East Arriving

St. Louis, Dec. 11.—Demand for foundry coke is less active. Shipments from eastern fields have been arriving in large volume, and accumulations are noted. More reaction against prices has developed, foundrymen being confident of future supplies. Local by-product makers report of falling off in demand for metallurgical coke, but other industrial and domestic buying is active. The coal trade is dull and weak. Operations at many Illinois pits are on a basis of two to three days per week.

Alabama Market Continues Firm

Birmingham, Ala., Dec. 11—Independent coke interests in Alabama are shipping their product as quickly as made, and some furnace companies also are selling coke in the open market. Quotations show little change. Production is maintained at recent levels.

Chicago Operations Gain

Chicago, Dec. 12.—Illinois Steel Co. has increased its operation to a shade over 80 per cent capacity and has added one blast furnace stack at the Gary works. This gives 20 active stacks out of 27 producing iron for steel making. The mill has increased its rail rolling schedule from 7000 to 9000 tons per week to meet demands of railroads. Inland Steel Co. continues its operation unchanged at 65 to 70 per cent of capacity, which it does not expect to exceed during the present winter.

Bar Bookings Are Steady

Producers Decline Larger Tonnages Due to Delivery Problems—Still Seeking First Quarter Material—Some Foreign Steel Is Sold

BAR PRICES, PAGE 1600

Chicago, Dec. 12.—Bookings of soft steel bars continue steady and producers could book a larger tonnage if delivery requirements could be met. Under present conditions, orders are selected to meet the possibility of deliveries. The greatest difficulty now met is to provide users as much material as they need. Car builders are pressing especially hard and are forced to take some material from warehouse. Present car inquiry is sufficient to keep shops busy through first half of next year. Agricultural implement manufacturers are meeting sufficient demand from farmers to cause them to enlarge their building program for the first time in two years. At present they are buying to balance their stocks to July 1 and during second quarter will come into the market in their ordinary way for a full year's supply. Reinforcing bars are difficult to obtain in sufficient tonnages and fabricators find some difficulty in obtaining sufficient bars for their purposes.

Bar iron is selling in somewhat better tonnage, as railroads are taking enlarged quantities. The quotation on this material ranges from 2.35c to 2.50c, Chicago mill, according to the specification.

Rail steel bars are dull at 2.00c, mill, with light demand and relatively small backlogs.

December Sales Fair

Pittsburgh, Dec. 12.—Demand for merchant steel bars in December promises to exceed that of November. This business mostly is made up of fair sized tonnage involved in spot demands although specifications against contracts too, have been numerous. While most independent producers can give three to five weeks' deliveries on some sizes, the Carnegie Steel Co.'s schedules still are much deferred. It is arranging to book its regular customers' needs for the first quarter at figures around 2.00c, base Pittsburgh. Some buyers of large tonnages expect to be able to close at 1.90c, the same price they have been paying during the past three months or more.

The refined iron bar situation remains largely unchanged with demand but little improved. Prices are firm at 2.60c, with double refined iron quoted at 4.50c, base Pittsburgh.

Foreign Material Sold

New York, Dec. 12.—Fair sized lots of Belgian bars, hoops and bands including one lot of 400 tons, have been sold in this district during the past week. This foreign steel is competitive only at tidewater or nearby points. The Belgium bars have been sold at 2.10c duty paid, tidewater. Inasmuch as local buyers must cart their bars to plants whether they are delivered by rail or water, the foreign bars have an advantage here of the freight rate from Pittsburgh to New York less the difference in price. With foreign bars at 2.10c, duty paid, New York, and domestic bars at 1.95c to 2.00c, base Pittsburgh, the advantage of the foreign bars here is only 19 to 24 cents per 100 pounds. Incidentally, the Belgian bars are being sold with the same extras as American bars.

The Belgian hoops and bands are being sold at 2.75c, base, duty paid at tidewater, which gives the Belgian hoops and bands an advantage locally of 34 cents per 100 pounds.

Demand for steel bars continues to come out in sufficient volume to replace mill shipments so that mill deliveries do not show much tendency to move closer. A good many consumers are covered for the first quarter. As a rule the market is 2.00c base Pittsburgh, with 1.95c on attractive tonnages. On some special business 1.90c Pittsburgh has been named.

Manufacturing Users Show Faith

Cleveland, Dec. 12.—Various consumers in this territory particularly among the manufacturing class continue to seek tonnages of steel bars against their first quarter requirements and to that extent show faith in prevailing prices. Many of these have tonnage on mill books to be delivered during the first quarter but they are desirous of placing additional amounts. The mills are discriminating in accepting additional tonnage depending on the amounts for whcih they are already obligated to various buyers. Automobile parts manufacturers in this territory are among those most active in the market. Prices on steel bars are steady at 2.00c Pittsburgh and there are fewer reports of any shading of this figure which at no time have been numerous.

Cold-Drawn Specifications Heavy

Pittsburgh, Dec. 12.—Actual specifications in hands of cold-drawn steel bar producers in many cases exceed contract obligations due to the policy several have maintained of sidestepping contracts in favor of orders. On these a few makers here can proceed at the present average operating rate of 90 per cent through February. Direct and indirect commitments to the automotive industry are large and latterly some large buying has been conducted by the electrical companies. The latter industry, while not absorbing so large an aggregate tonnage as the automotive business, takes more sizes, utilizing flats, hexagons and rounds, the consumption of flats being heaviest. Makers expect to close contracts for merchant steel bars the latter part of this week and while 2.00c is voiced as the figure small buyers will have to pay, tonnage undoubtedly will be available at the 1.90c figure prevailing during the past quarter. Inquiries now current for cold-drawn steel bars involve many 50-ton lots, together with several 200 to 500 tons and with an occasional one calling for 1000 tons of assorted sizes. One of the latter on which action is postponed for a week or so, involves 15 or 20 different sizes but others are more attractive from a rolling standpoint. The purchaser of the 1800-ton lot reported last week is expected to require a similar tonnage in January. Shipments on its present order have started. The general market price is unchanged at 2.50c, base Pittsburgh. Intermittent embargoes hinder shipments, particularly to the East, and one mill reports 98 per cent of its heavy output is for points west.

Slump in Demand

Philadelphia, Dec. 12.—Steel bar demand continues fair but is smaller than in recent weeks. However, consumption continues heavy but consumers are postponing buying until after the first of the year. Steel bars are being quoted here at 2.00c, Pittsburgh, with 1.95c being named on especially attractive lots.

Bolt, Nut, Rivet Demand Is Fair and Prices Hold

NUT AND BOLT RICES, PAGE 1662

Chicago, Dec. 12.—Consumers of bolts and nuts are holding off placing specifications for first quarter supplies and it seems probable the prices for this delivery will settle at about 5 points above the present discounts. In anticipation of the lower prices the market is relatively inactive. Producers of bolts and nuts find specifications on last quarter contracts are being filed liberally.

Negotiating for First Quarter

Pittsburgh, Dec. 12.—While in a small way some first quarter business has been placed on the books of nut, bolt and rivet makers, this week marks the real start in efforts along this line. Large producers started Monday night to canvass their trade since inquiries were being received daily outlining first quarter requirements. The last named discounts are being used as a basis in these negotiations. Spot demand involves from a single carload up to a few hundred tons at a time. In connection with rivets, the market seems to have settled to about 3.00c on structural and 3.10c, base Pittsburgh, on boiler rivets.

Bolt Specifications Larger

Cleveland, Dec. 12.—Specifications for bolts and nuts are slightly heavier than a week ago, makers in this district report. This is somewhat contrary to expectations as it was expected business would be limited during the balance of the month. Little new business is coming out but the outlook for sizable buying after the first of the year is bright. The automotive interests appear to be the largest buyers at this time. Prices are strong and steady.

Some new business as well as specifications against contracts are being accepted by the leading rivet maker here. New business is being taken at the recently announced Pittsburgh base prices of 3.00c for structural and 3.10c for boiler. Small rivets are going at 65 and 5 off.

Great Increase Shown in Iron Ore Receipts

ORE PRICES, PAGE 1662

Cleveland, Dec. 12.—Receipts of iron ore at Lake Erie ports for the

season of 1922 amounted to 31,713,645 tons according to the Lake Superior Iron Ore association's data. Shipments from Lake Erie ports during the season totaled 21,095,473 tons. The balance on dock at the close of the shipping season was 9,899,313 tons, compared with 9,032,595 tons a year ago.

Receipts at lake front furnaces, located at Lake Erie ports, for the season of 1922 amounted to 8,507,194 tons, compared with 2,712,433 tons in 1921. Receipts at other than Lake Erie ports for the past season were 10,483,888 tons, against 6,560,139 tons for 1921. Following are details relating to the receipts at Lake Erie ports and shipments therefrom . in 1922:

Port	Receipts	Shipments	Balance on Dock Dec.1, 1922
Buffalo and Port			
Colborne, Ont.	3,865,874	305,145	261,350
Erie	666,288	621,728	499,579
Conneaut	6,540,031	5,951,169	2,098,787
Ashtabula ...	7,730,461	7,158,773	2,969,882
Fairport	1,032,797	817,411	466,310
Cleveland	7,169,586	4,130,005	1,883,058
Lorain	2,835,551	996,404	543,112
Huron	654,575	447,500	886,248
Toledo	1,218,482	667,338	290,987
Total Lake Erie....	31,713,645	21,095,473	9,899,313
Comparative Total one year previous	15,554,341	12,195,679	9,032,595

New Hoop Demand Slow

HOOP PRICES, PAGE 1600

Pittsburgh, Dec. 12.—Makers of hoops and bands report a falling off in new business although some have fair sized backlogs on which they continue to receive specifications from time to time. A few first quarter contracts have been written and certain producers have not departed from a minimum of 2.90c, base Pittsburgh. Others have quoted 2.75c in certain instances.

McKinney Steel Co. Plans Some Finishing Mills

Plans are under consideration by the McKinney Steel Co., Cleveland, for the construction of finishing mills to join up with its present steel works at Cleveland. No decision has yet been reached as to what form of finishing operations will be adopted. For the present, attention is being given to cost estimates and preliminary plans now in prepartion by mill engineers. Structural shape and bar capacity is receiving consideration. Several years ago the McKinney Co. entertained the idea of entering into the manufacture of steel rails, but this plan subsequently was dropped.

The McKinney Steel Co. at present does not roll its steel beyond the semi-finished stage and it is one of the most active sellers of sheet bars, billets and slabs. Its steel plant at Cleveland consists of fourteen 100-ton basic open-hearth furnaces, with a capacity of approximately 700,000 tons of steel ingots annually It has one 40-inch blooming mill, one 21-inch billet and an 18-inch combination sheet bar and billet mills. The steel plant is connected with the company's river group of four blast furnaces. The output of two of these furnaces is used in the conversion operations.

Plate Market Is Stronger

Shading of Price Less in Evidence as Good Volume of Business Continues To Be Placed—Some Independents Firmer

PLATE PRICES, PAGE 1600

New York, Dec. 12.—The inquiry of the Mexican Petroleum Co. for 20 oil storage tanks, involving about 5000 tons of plates, is the biggest pending transaction in the plate market here. It was expected this inquiry would be closed last week but there is no indication as to when final action will be taken. Nothing further has developed with respect to an inquiry for 800 tons of plates for a riveted pipe line for Honolulu. Plate demand here is comprised mainly of small tonnages. On attractive lots it is easy to do 1.90c, base Pittsburgh, and carloads have been placed in some instances at this figure. As far as known, the 1.85c price has not been done recently and the mills are attempting to maintain the market at 1.90c.

Plates Firm in West

Chicago, Dec. 12.—Although rumors are heard of concessions in quotations on steel plate by eastern producers, no such condition exists at Chicago, the leading producer quoting 2.10c, mill, and a large independent mill 2.30c, mill. Heavy demand from car builders on contracts already placed and an equally heavy inquiry for material to go into cars now being figured, promises to keep Chicago plate mills busy through first quarter and well into the first half. In addition to car business, much tank building is being undertaken and one mill has protections out with tank builders covering at least 15,000 tons for tanks the destination not divulged.

Tank Requirements Low

Pittsburgh, Dec. 12.—Only an occasional requirement for sheared tank plates is noted by fabricators here, involving 100 to 350 tons. A boiler and tank manufacturer at Youngstown, O., recently was the successful bidder upon a small lot of tanks, taking about 1000 tons of plates, and is understood to have closed on that tonnage in the valley. Nothing is reported here concerning the 2500 tons of plates needed for the tanks required by the New England Oil Co., as inquired for several weeks ago. The Carter Oil Co., and other oil interests order small tanks from time to time for oil stocking purposes. Some of these have been coming from the El Dorado, Kan., field. While some producers have a 2.00c, base Pittsburgh, minimum on plates, others shade that by $1 or $2 per ton on tonnage.

Market Is Strengthened

Cleveland, Dec. 12.—A stronger market on plates now prevails as a result of more liberal bookings by independent mills which recently had been active in seeking business. New tonnage taken by some of these producers from various sources during the past week or two has been of large total and has put them in a more comfortable position. On a lot of 2000 tons for western Pennsylvania delivery for first quarter, the business went at 1.95c, Pittsburgh, and with one exception all the independent makers quoted 2.00c, Pittsburgh. While 1.90c, Pittsburgh has not completely disappeared this is much rarer and the market appears to be working back toward a 2.00c level. Quotations under 1.90c which recently had appeared in this territory now seem out of question. Boiler and specification plates are very firm at 2.00c, base Pittsburgh. The 3000 tons for a boat to be built by the Toledo Shipbuilding Co. for the Huron Transportation Co. will be supplied by the leading interest. A Sharon Pa. fabricator has closed with valley and eastern mills for 1100 tons for oil tank work.

Fair Tonnages Coming Out

Philadelphia, Dec. 12.—Some fair plate tonnages are coming out and current inquiry includes one lot for 1600 tons. However, the volume of business generally is less owing to the holiday season. The Pennsylvania railroad during the past week placed a further large tonnage, on which it was intimated 1.90c, base Pittsburgh had been shaded. So far as known, however, 1.90c, Pittsburgh still is the minimum quotation on attractive lots. A considerable proportion of the business placed here continues to bring 2.00c, Pittsburgh. Due to the inability of the Steel corporation plants to make deliveries when wanted, the American Car & Foundry Co. placed considerable car plates with the Inland Steel Co. and Midvale Steel & Ordnance Co. Eastern plate output appears to be under 50 per cent.

Erecting New Steel Plant

Work has started on foundations for the plant of the Michigan Steel Corp. to be erected on Ecorse river near Oakwood, Mich. According to George L. Fink, president, the corporation expects to be in production by July 1. It is planned to have an initial output of 3000 tons of steel sheets monthly. According to officials of the company contracts have been signed with the Jones & Laughlin Steel Co. for the fabricated structure; with the General Electric Co. for motors and the Mesta Machine Co., Pittsburgh, for six hot sheet mills.

Plans Capital Increase

The United States Radiator Co., Detroit, with approval of stockholders plans a new issue of preferred stock on the basis of 1.42 shares of new stock for one of old stock to care for the 42 per cent deferred dividends on the preferred stock. The capital stock of the company with the share holders' approval was raised from $8,000,000 to $13,000,000. Of this amount $5,000,000 will be classed as 7 per cent preferred stock and approximately $4,000,000 will be set aside to retire preferred stock. The remaining $1,000,000 will be left to the directors' discretion.

Scrap Shows Signs of Life

More Price Reductions Reported but Buyers Take Some Tonnages and Indications Point to Greater Activity—Dealers Cover Shorts

SCRAP PRICES, PAGE 1666

Chicago, Dec. 12.—Although quotations on some grades of iron and steel scrap have moved downward in the past week, indications are that the bottom is nearly reached and some firmness is apparent. This may result from efforts of dealers to buy tonnage to apply on short sales before the end of the year. On the other hand, it is believed buying by consumers is likely to start shortly. Quotations on iron car wheels are nominal and in line with other products, although there is no activity in this material. Some dealers with short sales are offering higher than the nominal market to obtain tonnage to apply on their sales at a higher price. Roads generally are applying their scrap wheels on exchange contracts rather than selling them. Heavy melting steel is quoted at about $17 per gross ton, which is slightly above the recent minimum. Cast grades are somewhat more active, but rolling mill grades are quiet. The Wabash railroad offers 1250 tons, the Great Northern 1500 tons, the Chicago Great Western 800 tons, and the Soo line 800 tons.

Demand Small and Scattered

Philadelphia, Dec. 12.—Scrap demand is small and scattered. Consumers generally are out of the market due to a desire to keep inventories as small as possible until the end of the year. Some prices slightly are off but the level generally is unchanged. Dealers generally are not anxious to sell.

Market at Buffalo Quiet

Buffalo, Dec. 12.—The scrap market is quiet this week and is passing through its customary pre-holiday dullness. Dealers are trading among themselves and are paying $19 to $19.50 for heavy melting steel. Some trading is noticeable in borings, turnings, etc., but cast low phosphorus and similar commodities are dull. A better market is expected before Jan. 1 as stocks of consumers are low and with the steady mill operation more material will be needed.

Expect Buying After Jan. 1.

Cincinnati, Dec. 12.—The scrap market continues quiet so far as consumer buying is concerned but dealers are active in preparing stocks, closing up pending lists and adjusting accumulations. Heavy tonnage has been taken on by local dealers recently, including large quantities of railroad scrap. Until the end of the year consumers are not expected to be much in evidence but there is a general belief that soon after there will be a big buying movement. This, together with the fact that what are regarded as good prices have been bid on all lists recently submitted, foreshadows higher prices. The market is firm and unchanged at current schedules.

Only Specialists in Demand

St. Louis, Dec. 11.—Aside from a fair demand from the steel foundries for specialties, the scrap market continues dull. There is a shade better demand for cast grades, after about three weeks of extreme quietness. Offerings are liberal and most of the plants apparently have supplies on hand or under contract to carry them through the balance of this year. Purchasing for first quarter is almost entirely absent. Arrival of inventory season is given as a contributing cause to the present apathy on the part of buyers. Yard stocks continue to grow and are larger now than at any time in a number of weeks. Shipping instructions are backward, and rejections are more numerous than customary. The principal railroad offering before the market was a list by the Wabash of 1250 tons. The large lists of the Pennsylvania southwestern region and Louisville & Nashville were closed, but with the exception of the steel specialties included, virtually the entire tonnage went east. Little country scrap is arriving. There is an oversupply of rails for rolling, the leading consumer having covered his requirements for the next few months with about 15,000 tons still hanging over the market.

More Life Shown in South

Birmingham, Ala., Dec. 11.—The scrap market is showing a little more

(*Concluded on Page 1619*)

Quote Sheet Bars $36.50

Independent Makers Meet Leading Interest's Figure on Semifinished Material for First Quarter—Tonnages Closed

SEMIFINISHED STEEL PRICES, PAGE 1600

Pittsburgh, Dec. 12.—Customers of the Carnegie Steel Co. as well as independent producers of semifinished material are placing contracts for first quarter needs, particularly sheet and tin bars, since the former interest announced last week a price for that period of $36.50. While one or two independent companies have not as yet decided on their price, others have named $37.50, Pittsburgh or Youngstown, and some sales have been made on that basis. One lot just placed on the books by an eastern Pennsylvania steel company for first quarter delivery near Pittsburgh involves 6000 tons of bessemer and open-hearth sheet bars at $37.50, Pittsburgh. This consumer now is seeking 500 to 1000 tons of slabs per month for the same period.

Some independents are quoting the same price on slabs as applied to sheet bars, and would name the same figure on billets. At the moment, no inquiries for rerolling billets are current except some small ones involving 50 tons or more at a time for stirring rods. One contract for forging billets, however, has been closed at $47.50, Pittsburgh, involving 6000 tons for shipment during the first three months of the year. Some spot forging billets are said to be available at $45, Pittsburgh.

Activity in wire rods is not so heavy as recently. A few inquiries were out last week but these have either been satisfied in part, or withdrawn for the time being because of the sold-up condition of most makers. Wire rods are quoted from $45 to $50, Pittsburgh, the minimum, representing the American Steel & Wire Co.'s figure. Some small sales recently were recorded at $47.50, while one or two independent producers claim to be adhering to a minimum of $50, Pittsburgh. Skelp is quoted at 2.00c, base Pittsburgh, with little interest noted.

Canadian Interest in Rods

Buffalo, Dec. 12.—Interest in Canada in wire rods has quickened and inquiries totaling 2000 to 3000 tons are before the market. The price being quoted here is $50 Pittsburgh and the Canadian mills which are much below this will probably get the business.

Valley Makers Quote $36.50

Youngstown, O., Dec. 12.—Two producers of semifinished material have brought their quotation on sheet bars in line with that recently announced by the Carnegie Steel Co., namely $36.50, while the third shows some hesitancy in stating its policy. Prior to last week some small tonnages of sheet bars for first quarter production were booked at $38, Youngstown, and quotations of $37.50, Youngstown, were submitted on three inquiries in circulation. No new negotiations have been conducted. Some excess tonnage of sheet bars, however, became available at one plant this week for which the mill is soliciting a buyer at $36.50, Youngstown. As far as can be ascertained no tonnage of this product has been moved as yet at $36.50, although this figure represents the market here. No

Meets Corporation's Price

Cleveland, Dec. 12.—Independent steelworks are meeting the Carnegie Steel Co.'s price of $36.50 on sheet bars, billets and slabs for the first quarter, and some good tonnages have been booked at the lower level. Buyers are covering at this figure for some of their forward requirements. The leading independent maker in this district booked around 20,000 tons of the three products during the week at $36.50, Youngstown.

Various makers of rods are asking $50 Pittsburgh but attractive lots still bring out figures down to the $45 price of the American Steel & Wire Co. A tonnage is understood to have been booked in their territory by an independent mill at $46 Pittsburgh.

Strip Bookings Decline

STRIP PRICES, PAGE 1600

Pittsburgh, Dec. 12.—The falling off in hot and cold-rolled strip steel bookings is perhaps more noticeable

this year because of the heavy buying rate which ensued a short time ago for first quarter requirements. The few now being booked, however, involve fairly sizable tonnages so that the aggregate compares favorably with the total of the more numerous but smaller amounts then closed. In the case of cold-rolled, the market remains firm at 4.50c and while 2.90c is considered the general market on hot-rolled, that level being maintained in several cases, a minimum of 2.75 has been done in connection with large tonnage negotiations of certain buyers.

Large Orders

For Tin Plate Are Expected To Be Placed by Canmakers

TIN PLATE PRICES, PAGE 1600

Pittsburgh, Dec. 12.—By the end of this week tin plate specifications for March output will be in hand from large can makers and other consumers. This involves many thousands of base boxes since food container manufacturers universally are sanguine over prospects for tin plate consumption as are the manufacturers of general line cans. For that reason these specifications for March delivery will doubtless come unsolicited. Now and then a call is made on manufacturers for fair sized tonnages of spot tin plate for filling out purposes, and because stock lists have been so badly depleted it is impossible to grant the desired deliveries. From time to time American producers have opportunity to figure upon export inquiries but none recently has been placed here. While large domestic customers have a preferential price, the regular market remains unchanged at $4.75 per base box of 100 pounds, Pittsburgh.

Slight Slump in Demand from Warehouse

WAREHOUSE PRICES, PAGE 1658

Cleveland, Dec. 12.—Due to depleted stocks as well as the fact many consumers now are in the midst of their inventories, demand for iron and steel products out of warehouse has shown a slight falling off. However, orders are fairly numerous and with the exception of sheets, prices are firm. On sheets, it is understood the quoted prices can be shaded as much as 15 points.

Sheet Demand Weak

New York, Dec. 12.—Continued weakness in black and galvanized sheets and the beginning of the usual seasonal reaction in demand are outstanding developments in the warehouse market. The two leading sellers still are adhering rigidly to the sheet prices which they have had in effect for several weeks, but some of the other jobbers are continuing to offer concessions of 10 to 15 points.

Volume Well Maintained

Philadelphia, Dec. 12.—Local jobbers have reduced prices on some products 50 cents a ton. In fact all have been reduced except sheets and cold rolled. Business is maintained surprisingly well for this time of year. The volume is easily 60 per cent of normal.

Sheet Demand Sustains

Specifications from Automotive and Electrical Industries Heavy—Chicago Mills Booked Up, Tonnage Going Elsewhere

SHEET PRICES, PAGE 1600

Youngstown, O., Dec. 12.—Sheet demand is not urgent. Until the price levels have been tested thoroughly little can be expected in the way of substantial tonnages. The weak spots in prices of the various grades of sheets, which recently have been discernible, have disappeared and the market appears firm at 2.50c for blue annealed, 3.35c for black and 4.35c for galvanized, base, Pittsburgh. Many producers of galvanized sheets hesitate to increase their commitments because of spelter costs. In some cases galvanized tonnage already on the books is heavy and the price at which the business was accepted is understood to be low. In view of this situation, it is becoming increasingly difficult to find a source of supply of galvanized sheets in this district. One producer of this grade in a nearby district, who recently was soliciting business as low as $2 under present quotations, has withdrawn from the market and will confine his production to one, two and three-pass black. Some round tonnages of automobile sheets at competitive prices ranging from 4.70c to 4.85c base Pittsburgh have been refused during this week. A producer of a low-priced automobile is beginning to line up first quarter sheets of stamping quality and is understood to have closed with some independent mills at 4.85c and lower. Some demand for automobile sheets still is noted. Considerable headway now is being made in the construction of the Newton Steel Co.'s new plant of eight mills and the officials expect to apply power to four units during the first week in January and to the remaining four stands early in February.

Sustained Demand Is Feature

Pittsburgh, Dec. 12.—Sheetmakers note a sustained demand for full-finished automobile sheets, galvanized, black and blue annealed. Consumers of electrical sheets and specialties are active in furnishing specifications. Prices of black sheets here are firm at the 3.35c level quoted for first quarter by the American Sheet & Tin Plate Co. In one or two directions in other localities 3.25c still appears to be available, but 3.35c is considered the market here since more than 30 companies are quoting that price. Some independent producers are higher on blue annealed and on full finished automobile sheets than the American company, these markets being quotable at 2.50c to 2.60c and 4.70c to 5.00c, base Pittsburgh, respectively, the maximums being levels quoted by nonintegrated producers. Galvanized sheets are quoted at 4.35c, although independent producers are endeavoring to avoid long-term contracts believing it will be necessary soon to advance prices, owing to the higher cost of spelter. Demand for galvanized continues uninterruptedly, as well as for other sheets used in building construction. Sheet mill operations continue to improve somewhat, the American company attaining an 85 per cent basis last week, which it hopes to equal or exceed during the present week. Independents are averaging about that same percentage. Steel supplies to sheet mills are increasing now that steel producers are able to make better deliveries. The sheet bar market has been clarified since the Carnegie Steel Co. announced its $36.50 price for first quarter, and by sales by independents as high as $37.50 for the same period. The American Sheet & Tin Plate Co. has sheet obligations as far ahead as April of next year. These are in better shape than ordinarily is the case since more than 70 per cent are in the form of actual specifications, so that the producer has orders for all it can produce and ship in January and February, and in some cases all or most of March of next year. It could increase that figure by requesting additional specifications but these will be allowed to come along in due time. In the meantime customers are pressing for deliveries and in some cases requesting that additional tonnage be added to their contracts.

Belgian Sheets Offered

New York, Dec. 12.—Belgian sheets have been offered here but the prices so far have not resulted in any business. On Belgian black sheets the price named is 3.54c, duty paid, New York, for 28 gage, with the usual American extras. In Belgian blue annealed sheets the price is 2.75c, duty paid, tidewater, for 10 gage.

Business at Buffalo Increases

Buffalo, Dec. 12.—Sheet business is very good with local sellers, having increased exceptionally during the past week. One local mill expects to retire from the market for the first quarter within a few days.

Chicago Mills Sold Up

Chicago, Dec. 12.—With both Chicago producers of steel sheets entirely sold up for first quarter delivery, consumers in this market find no alternative but to purchase their further requirements from mills in the valleys or near Pittsburgh. Prices are nominally 2.50c for blue annealed, 3.35c for black and 4.35c, Pittsburgh, for galvanized, and eastern makers appear to be following the same schedule. Consumers in this district need more sheets than local producers can furnish them and are placing tonnage elsewhere.

First Quarter Needs Covered

Philadelphia, Dec. 12.—Sheet demand is well maintained. Considerable first quarter tonnage has been entered and most consumers have covered, current business is going at 2.50c, Pittsburgh, for blue annealed; 3.35c for black, and 4.35c for galvanized. Blue annealed is strong, and considerable tonnage has been closed at 2.60c. Black is weak, and some attractive tonnage has gone at 3.25c. Galvanized is firm at 4.35c.

Louis Miller, doing business as the General Machinery & Supply Co., Boston, has filed a voluntary petition in bankruptcy, with liabilities of $48,699.92 and assets of $1200.

Shape Orders Keep Up

Structural Tonnages Still Are Being Placed and Inquiry Continues Strong—Several New Large Projects Appear

STRUCTURAL SHAPE PRICES, PAGE 1600

Boston, Dec. 12.—While large tonnages are not conspicuous in the present structural market in New England, buying to replenish low stocks and to take care of miscellaneous repair work continue along encouraging lines and recent orders from warehouses show a round total. One order is for 300 tons and another for 250 tons. Bids have been received for an insurance building in Boston calling for 2000 tons of steel.

Some Large Tonnages Placed

New York, Dec. 12.—Sentiment in the eastern structural market is being strengthened by continued good inquiry, with the result that shapes are again holding firmly at the 2.00c, Pittsburgh, minimum. The mills are booked up around six to eight weeks and with exceptions fabricating shops are now booked ahead two to three months. An interesting award of the past week calls for 1350 tons for a plant for the Lehigh Portland Cement Co. to be erected in Birmingham, Ala., the tonnage to be supplied by the Bethlehem Steel Bridge Corp. Four recent awards went to the Hay Foundry & Iron Works, including 1200 tons for an apartment in this city.

Building Holds Its Rate

Chicago, Dec. 12.—In spite of winter's approach, demand for structural material continues unabated, and lettings in Chicago territory during the past few days include a number of projects of sizable tonnage, while prospective business contains numerous other projects requiring much steel. The largest item placed recently involves 2300 tons for a power house addition at Joliet, Ill. Prices on plain material continue at 2.00c to 2.10c, Chicago mill, with Chicago producers able to offer relatively little for delivery during first quarter. Fabricators with material coming from mills continue to book such business as is attractive. Some difficulty is being met in obtaining plain material as well as bolts and rivets.

Transmission Towers Need Tonnage

Pittsburgh, Dec. 12.—At the present time structural shapes for transmission towers are among the largest items before the trade. The American Bridge Co. has been awarded 3200 tons by the Power Construction Co., Worcester, Mass., and another large tonnage, 1800 to 3500 tons, is to be bought by the Niagara Falls Power Co. A third tonnage is up in eastern Pennsylvania involving 1500 tons or more. While much talk is heard of a 1.90c price, several fabricators report inability to obtain quotations of less than 2.00c, base Pittsburgh, and that represents the general market. One eastern Pennsylvania steel company reports the receipt this week of several specifications aggregating 700 or 800 tons from a local fabricator which had been endeavoring to obtain a 1.90c price from it on a large quantity of structural material for stock. A wide range of figures are noted in connection with material fabricated and erected, $80 to $120 per ton being the spread of quotations on different jobs under varying circumstances and conditions.

4000-Ton Job Appears

Cleveland, Dec. 12.—An inquiry identified only by the architect and engineer, calling for 3000 to 4000 tons for a 16-story building for Cleveland has been received by contractors and fabricators. Bids now are being taken. Work in this district recently has been small and for a limited number of projects. Placing of two general contracts this week for an aggregate of 350 tons for two buildings and request for bids for 200 tons for a third wind up an active school program for 1922. The 1923 schedule will not be started for several weeks. Contract for 500 tons for a building for the National Screw & Tack Co. has been placed but 220 tons involved in a crane runway for the same company has been postponed indefinitely. Prices are unchanged but are showing more firmness at 1.90c to 2.00c, Pittsburgh.

Some Awards Expected

Philadelphia; Dec. 12.—Shape buying in the past week was smaller. The market is 1.90c to 2.00c Pittsburgh. The former is the minimum on large lots.

CONTRACTS PLACED

Awards reported this week	**15,813 tons**
Awards reported last week.....	**18,049 tons**
Awards reported two weeks ago...	**9,283 tons**

3200 tons, transmission towers for the Power Construction Co., Worcester, Mass., to American Bridge Co.

2500 tons, building for Continental National Bank & National Bank of Republic, Salt Lake City, to Minneapolis Steel & Machinery Co.

2300 tons for power station for Public Service Co. of Northern Illinois at Joliet, Ill., to Mississippi Valley Structural Steel Co.

1350 tons, plant for Lehigh Portland Cement Co., Birmingham, Ala., to Bethlehem Steel Bridge Corp.

1200 tons, apartment, Eighty-second street and Broadway, New York, to Hay Foundry & Iron Works.

810 tons for Seventh street shed and elevator sacking plant for commissioners of New Orleans, to St. Louis Structural Steel Co.

500 tons, office building for Westchester Lighting Co., Yonkers, N. Y., to A. E. Norton, Inc.; R. H. Howes Construction Co., general contractor.

500 tons, turbine units for Pacific Service Corp., Newark, to Hay Foundry & Iron Works.

500 tons, building for National Screw & Tack Co., Cleveland, to Riverside Bridge Co.

377 tons for Thornwall office building for Southern California Telephone Co., Los Angeles, Cal., to American Bridge Co.

349 tons for turntables for Missouri Pacific railroad, St. Louis, to American Bridge Co.

309 tons for three plate girder spans for Illinois Central railroad, Simpson, Ill., to American Bridge Co.

300 tons, branch for Mechanics & Metals bank, New York, to Hay Foundry & Iron Works.

300 tons, bridgework for Chesapeake & Ohio railroad, to American Bridge Co.

200 tons, school at Dayton, O., to an independent fabricator.

200 tons, gymnasium for Ohio university, Athens, O., to the Pittsburgh-Des Moines Steel Co.

200 tons, parish for Reformed church, Brooklyn, to American Bridge Co.

200 tons, building for South Brooklyn Savings bank, Brooklyn, to Hedden Iron Construction Co.

183 tons for two self supporting steel stacks at Reinach, Okla., for Byllesby Engineering Corp., Chicago, to Minneapolis Steel & Machinery Co.

150 tons, building for Fair Garage, Chicago, to Lakeside Bridge & Steel Co.

150 tons, telephone exchange, Hollis, L. I., to Hay Foundry & Iron Works.

120 tons for self supporting steel stack at Minneapolis, for Northern States Power Co., to Minneapolis Steel & Machinery Co.

115 tons for Central avenue bridge at Minneapolis, for Northern Pacific railroad, to American Bridge Co.

100 tons, Longfellow school, Toledo, O., to American Bridge Co.

100 tons, apartment house, Powell near Pine street, San Francisco, to Central Iron Works.

100 tons, Cambridge, Mass., subway extension, to New England Structural Co.

CONTRACTS PENDING

3000 tons for Union League club building, Chicago, bids opened Dec. 15.

3000 tons for girder and truss spans for Great Northern railroad, bids asked.

3000 to 4000 tons, highway bridge, Yankton, S. D., American Bridge Co. low bidder.

3000 to 4000 tons, 16-story building at Payne and Walnut avenues and Twelfth street, Cleveland, George A. Grieble, Cleveland, architect and engineer, bids on general contract being taken.

2100 tons, highway bridge, Waverly, Mo., bids being taken.

2000 tons, insurance building, Boston, bids in.

2000 tons, bridge at Spokane, Wash., Bethlehem Steel Bridge Corp. low bidder.

1400 tons, state highway bridge, North Carolina, bids asked.

1000 tons, Slattery hotel, Broadway and Seventy-seventh street, New York, specifications to be issued soon.

1000 tons, Polstein apartment, West Sixty-eighth street, New York, specifications to be issued soon.

780 tons, Fourteenth street subway extension, New York, bids close Dec. 22.

700 tons, power plant for the Memphis Gas & Electric Co., Memphis, Tenn., bids asked.

700 tons, Kern hospital, Bakersfield, Cal., bids close Dec. 15.

500 tons, municipal highway bridge, Boston, bids asked.

400 tons, state highway bridge over Stony creek in Glenn county, Cal., bids close Dec. 26.

400 tons, Tanforan racetrack grandstand, San Francisco, general contract to Grace & Berieri.

220 tons, crane runway, National Screw & Tack Co., Cleveland, indefinitely postponed.

250 tons, shops for Western Union Telegraph Co., Chattanooga, Tenn., bids asked; Stone & Webster, Boston, engineers.

200 tons, Thomas Jefferson junior high school, Cleveland, general contract to Fred Horlock.

200 tons, Addison school, Cleveland, bids close Jan. 1.

200 to 300 tons, plant addition for Baldwin Locomotive Works, Philadelphia, bids asked.

150 tons, Longfellow school, Cleveland, general contract to Tenbusch Parker Construction Co.

Wire Shipments

Still Are Being Deferred—Demand Continues Heavy

WIRE PRICES, PAGE 1600

Pittsburgh, Dec. 12.—Six to eight weeks seems to be the period nail buyers have to wait for deliveries even though nail plants are operating at 80 per cent. Other wire products shipments likewise are deferred, but the heaviest demand appears to be for nails. While here and there jobbers are postponing purchases of mixed carloads of nails, wire and fencing, sizable tonnages made up of this character of business will be closed after the first of the year. These desire to enter the year with low stocks although others need the material and on account of deferred deliveries they are ordering and are pressing for deliveries as soon as possible. Plain wire is unchanged at 2.45c and wire nails at 2.70c, base Pittsburgh.

Would Defer Wire Shipments

Chicago, Dec. 12.—Demand for wire and nails continues excellent and some

buyers are asking that shipments be held up until after Jan. 1, indicating a desire not to carry heavy stocks through inventory. On account of present deferred deliveries, shipments would be after July 1 in any event. Generally prevailing open weather is helping demand for wire. Prices remain steady at 2.45c, Pittsburgh, wire and 2.70c, Pittsburgh, for nails.

Jones & Laughlin Earnings for Years Are Given

Earnings of the Jones & Laughlin Steel Co. for a period of 10 years are given in a letter by B. F. Jones, president of the company, to the Union Trust Co. of Pittsburgh in connection wiht the offering to the public of the $14,000,000 7 per cent preferred stock to be issued by the company in accordance with the plans of recapitalization recently announced. The Pittsburgh Trust Co. is the purchaser of the $14,000,000 of preferred stock and it is announced that this is the only stock that will be offered to the public at present. The remaining preferred and the entire issue of the common stock is to be retained by the present stockholders of the Jones & Laughlin Steel Co.

President Jones' statement of the company's earnings for a period of ten years is as follows:

Years	Net Sales	Depreciations, Depletion, Amortization	Net Earnings, after Depreciation, Taxes etc.
1913 ...	$ 43,101,196	$ 1,420,650	$ 5,340,669
1914 ...	32,402,076	2,053,890	2,702,631
1915 ...	44,431,035	2,054,895	7,267,022
1916 ...	77,353,009	3,126,026	20,257,877
1917 ...	129,810,539	6,117,696	26,622,033
1918 ...	128,923,400	18,179,144	7,294,531
1919 ...	103,243,608	6,545,961	17,120,237
1920 ...	148,615,441	8,568,559	22,611,085
1921 ...	39,930,625	3,682,774 def.	3,610,037
1922* ..	71,500,000	3,900,000	4,900,000
Total ...	$819,310,929	$55,649,595	$110,506,048
Ave. ...	$ 81,931,092	$ 5,564,959	$ 11,050,604

*December estimated.

This shows that earnings for the past ten years have averaged 2.6 times the dividend requirements on the $60,000,000 preferred outstanding. Dividends have amounted to $38,700,000 and $71,800,000 has been retained in the business. The consolidated balance sheet as of Oct. 31, 1922, shows net tangible assets of $137,200,000 or $228 per share of preferred stock. Total funded debt was $71,700,000. Current assets were $66,000,000, including $31,400,000 of cash and government obligations.

Michigan Plants Increase

A number of manufacturing companies in the Detroit district have recently announced increases in capitalization. The Michigan Malleable Iron Co., Detroit, has increased its capital stock from $800,000 to $2,500,000. Jenke & Muir Mfg. Co., Detroit, makers of automobile springs and accessories, has voted to increase from $30,000 to $3,000,000 with 30,000 shares no par value. The Palmer-Bee Co., Detroit, has increased from $100,000 to $1,000,000. The Regent Stove Co., Wyandotte Mich. has increased from $100,000 to $700,000. The Holland Furnace Co., Holland, Mich. has voted to increase from $50,000 to 10,000 shares no par value.

More Car Inquiries Out

Railroads, Buying Less in Past Week, Send Pending List Up to 45,000—One Carrier Asks for 5000 Additional

RAILROAD TRACK MATERIAL PRICES, PAGE 1600

New York, Dec. 12.—While little car demand is coming out from eastern railroads, fully 7500 freight cars have been brought out during the past week by western lines. The largest inquiry is that of the Union Pacific, involving 5000 refrigerator cars. Awards are light and include 100 tank cars for the Texas Co., to be built by the General American Tank Car Corp.

A leading locomotive inquiry calls for 65 for the Canadian National railways, which is soon to revive its inquiry for freight cars. Among contracts recently booked by the Baldwin Locomotive Works are two for the Lake Terminal, one for the Louisiana Central Lumber Co. and four for the Norton Griffith Ltd., Ceara, Brazil.

Orders have recently been awarded to the American Locomotive Co. for 107 locomotives. Of this total, 49 were for the Northern Pacific, 25 for the Denver & Rio Grande and 10 for the Central of New Jersey, the latter recently reported. The remainder includes one for the Lehigh Portland Cement Co.; two for the Inspectoria Federal Das Estrades for use on the E. F. Central Do Piarury; two for the Richmond, Fredericksburg & Potomac; one for the Riverside Portland Cement Co.; one for the Georgia Northern; one for the Essex Terminal, Canada; two for the Detroit Terminal, five for the Delaware, Lackawanna & Western; five for the Minneapolis, St. Paul & Sault Ste. Marie; one for the Warren Foundry & Pipe Co.; and one for the Union Pacific system.

Car orders for the year by months total 157,153 and have been as follows:

November	18,456
October	12,700
September	10,357
August	1,610
July	13,700
June	13,100
May	18,250
April	31,500
March	12,000
February	14,500
January	11,000

Single Carloads Being Bought

Pittsburgh, Dec. 12.—Orders for single carloads or two at a time continue to feature the light rail market. Most of these are going at 2.15c, base Pittsburgh, and occasionally a roller of rails from billets will quote a 2.00c price in competing for business with rerollers. Specifications continue to come to large makers such as the Carnegie Steel Co. but generally coal mine operators in western Pennsylvania and other bituminous districts are not using large tonnages, their operations still being curtailed by a limited car supply. Track accessories continue strong because of the well filled-up condition of order books generally. Output of tie plates at 2.35c and standard spikes at 2.75c largely is obligated for the first quarter. Small spikes also are well sold up at 3.50c although lower prices are said to be available in other districts. Spike machines are being operated close to 100 per cent in a number of instances in this locality. The general quotations on track bolts are 3.85c to 4.00c, base Pittsburgh, many first quarter contracts having been consummated during the drive for business inaugurated shortly after Oct. 1.

Few Cars Bought

Chicago, Dec. 12.—Although sales of railroad cars a week ago totaled more than 10,000, the past week has seen practically nothing placed with builders. On the other hand, inquiries for practically 13,000 cars have been brought out and total present active inquiry in the Chicago district is for about 45,000 cars. It is also definitely known that one road is about to inquire for 6000 cars additional. Total car sales in the Chicago district since January are 131,537. Inquiry for light rails is unusually small and this department lags. The same is true of standard steel rails. Some activity continues in track fastenings, the Chesapeake & Ohio being about to close for 5500 kegs of bolts and spikes for prompt delivery and 10,000 kegs for first quarter. The Great Northern wants 5500 kegs.

CONTRACTS PLACED

New York Central, 35 coaches to Pullman Co.; 10 motor suburban cars, to Standard Steel Car Co.; 10 baggage cars to American Car & Foundry Co.; and five combination baggage and passenger cars to Pressed Steel Car Co.

Texas Co., New York, 100 tank cars, to General American Tank Car Corp.

CONTRACTS PENDING

Baltimore & Ohio, 2000 hoppers, bids asked.

Canadian National, 2150 box cars, 100 ballast cars, 100 general service cars, 100 refrigerators, 800 automobile cars, bids asked.

Southern Pacific, 1200 gondolas and 500 logging cars, bids asked.

St. Louis, Troy & Eastern, 300 flat cars and 100 gondolas, bids asked.

Union Pacific, 5000 refrigerator cars for Pacific Fruit Express, including 300 for passenger train service, bids asked.

Sells Blast Furnace

Replogle Steel Co. has sold its No. 1 Crane furnace at Catasauqua, Pa., to the H. Sofranscy Co., scrap dealer of Allentown, Pa. This furnace was acquired by Replogle when it took over the Empire Steel & Iron Co. It is expected that the furnace will be dismantled.

New Worthington Officers

Changes in the organization of the Worthington Pump & Machinery Corp., 115 Broadway, New York, have been announced. E. T. Fishwick, formerly sales manager, has been made vice president in charge of sales to succeed F. H. Jones, vice president, resigned. J. E. Sague, also a vice president, resigned, has been succeeded by William Goodman, formerly assistant to the vice president. James C. Barnaby, formerly plant engineer of the Staten Island Shipbuilding Co., now is in charge of certain engineering work in the diesel oil engine division of the Worthington Pump & Machinery Corp.

Building Bar Buying Drops

Lull, Most Profound in Weeks, Halts Former Activity in Reinforcing Steel—Prospective Work Calls for Round Lots

REINFORCING BAR PRICES, PAGE 1600

Pittsburgh, Dec. 12.—Orders for small lots of concrete bars the past week have exceeded inquiries but in practically every case the individual tonnage has been relatively unimportant. Two of the largest involved a total of less than 200 tons. Orders for concrete bars for use on the Schenley apartments continue to be filed as occasion requires with the Cambria Steel Co. by the Metzger-Richardson Co. The total tonnage was reported several weeks ago. Other customers also are ordering in occasional lots up to 100 tons eac hand often are for stock. New inquiries are few and far between, the lull being attributed to the usual falling off in concrete work at this time of the year. Prices are a trifle stronger, the usual quotation being 2.00c, base Pittsburgh.

Seasonal Dullness Prevails

Cleveland, Dec. 12.—Fabricators of concrete reinforcing bars reported one of the quietest periods in recent weeks. Only small lots have appeared in new inquiries and sales. The dullness is viewed as seasonal as school and other work pending for action next spring indicates buying will be revived early next year with activity equal to that prevailing up to a short time ago. Prices at present are unchanged.

Selling Falls Off Sharply

Chicago, Dec. 12.—Sales of reinforcing bars are less for the past week than for any similar period in several months, although a large number of projects are being figured and considerable further buying doubtless will be done during the present month. Some new projects are also coming out each week and the present period of quiet is believed to be only incidental. Prices are firm at 2.50c, Chicago warehouse, and apparently no seller is willing to shade this figure, especially as bars from mill have been increased considerably for first quarter delivery over that prevailing during fourth quarter.

CONTRACTS PLACED

Awards reported this week	**1,407 tons**
Awards reported last week	**5,465 tons**
Awards reported two weeks ago	**6,260 tons**

650 tons for Illinois highway work, to Truscon Steel Co.

300 tons, building for Providence hospital, Sacramento, Cal., to Truscon Steel Co.

207 tons for part of unit 3, Commonwealth Edison Co., Calumet plant, Chicago, to Truscon Steel Co.

150 tons, building for Mengel Body Co., Louisville, Ky., Platoff & Bush, Louisville, general contractors; to Corrugated Bar Co.

100 tons for Bank of Coney Island, Coney Island, N. Y., to Kalman Steel Co.

CONTRACTS PENDING

2000 tons for Illinois highway construction, bids asked for Dec. 21.

260 tons for hospital building and power house for Kentucky Baptist Hospital association, Louisville, Ky.

160 tons, apartment house at Jackson and Laguna streets, San Francisco, bids close Dec. 22.

Tonnage not stated for court house at Kenosha, Wis., bids asked.

Pipe Demand

Continues Unchecked—Deliveries Deferred—Tube Prices Higher

PIPE PRICES, PAGE 1600 AND 1662

Pittsburgh, Dec. 12.—Unchecked demand continues for tubular goods in buttweld sizes and no let-up is in sight except as buying will be affected through curtailed building activity when the weather gets colder. Deliveries on buttweld pipe are from several months deferred, some makers being filled up on certain sizes for four months. One or two companies have pursued a policy of allocating their output and one in particular has enough applications on hand to cover production six months to come. Buyers of buttweld pipe universally are pressing for deliveries and many of them are ordering new lots without specifying any particular size. Deliveries on lapweld are somewhat easier. Oil well casing demand has slackened in the Pennsylvania oil districts but fairly sizable buying is being done in the South, West and Southwest. Line pipe producers expect that after the first of the year the delivery situation will make it necessary for those wanting line pipe or other oil well material to order forward large quantities so that it will be on hand when actually needed. Two or three lines are shortly to be projected which will require 5000 tons or more.

On Dec. 6 charcoal iron boiler tubes were advanced $10 per ton by the Parkesburg Iron Co., Parkesburg, Pa., and by the Reading Iron Co. The latter also advanced steel boiler tubes $16 per ton. The following are the new charcoal iron discounts:

	Carload	Less carload
1½-inch	Plus 12	Plus 16
1¾ and 1⅞-inch	Plus 2	Plus 6
2 and 2¼-inch	Minus 8	Minus 4
2½ to 3-inch	Minus 13	Minus 9
3¼ to 4½-inch	Minus 15	Minus 11

The following are the Reading Iron Co.'s discounts on steel boiler tubes, which, however, are not being generally followed as yet. The regular card discounts of the National Tube Co. and other producers are 8 points larger.

	Carloads	Less Carloads
1¼-inch	13½	9½
2 and 2¼-ich	28	24
2½ to 3-inch	39	35
3¼ to 4-inch	44	40

Buy for Spring Needs

New York, Dec. 12.—Demand for cast iron pipe for spring shipment is now coming out from gas companies on a scale which exceeds anything in the recollection of the oldest manufacturers. Business now being booked runs into thousands of tons, and virtually all sellers are booked 10 to 12 weeks ahead and in one or two cases, further. Prices are unchanged but are tending upward. No public lettings are noted.

Most Buying Small Lots

Chicago, Dec. 12.—Comparatively little inquiry and selling are being met in the present market for cast iron pipe. Shops are well filled with orders to carry them through most of the winter, made up of an aggregate of small lots, most of which were bought without taking bids. An extensive program is being mapped out at Akron, O., and bids will be taken Dec. 18 on 400 tons as the first lot. The market continues at $43, Birmingham, with conditions firm.

Seasonal Business Good

Birmingham, Ala., Dec. 11.—The cast iron pipe trade is good, considering the time of year. Lettings continue to come in, giving occasion for steady operations. Bills are being submitted on a number of new specifications. While $43 to $43.50 per ton is the quotation for 6-inch pipe, it is generally understood a better price may be obtained. Expectations are that Alabama plants will fill the large contract for San Juan, Porto Rico, tonnage, taken on by the United States Cast Iron Pipe & Foundry Co.

Spiegel Buying

Greater in Past Week—Prices $1 Lower —Some English Ferro Sold

FERROALLOY PRICES, PAGE 1600

New York, Dec. 12.—Inquiry for spiegeleisen is much larger and there has been some good buying during the past few days. This included a contract, in one instance, covering requirements over the first half of 1923. The price now is $35 to $36, furnace, for 20 per cent metal, depending on the quantity. This figure is $1 lower than the recently prevailing level, the reduction having been made as a consequence of the recent shading in prices of pig iron.

Several hundred tons of English ferromanganese have been sold during the past week at $100, duty paid, tidewater. Inquiry for ferromanganese is steady but does not involve a large tonnage in the aggregate.

Some of the large steel companies have closed contracts for their 1923 requirements of 50 per cent ferrosilicon and others are concluding negotiations at present. Many thousand tons are involved in the current business. Prices for 1923 range from $82.50 to $85, delivered, the range which has been quoted for December. Little alloy is obtainable for shipment this month, however. Contracting for 1923 ferrochrome requirements also is going forward, some contracts already having been signed. Prices named range from 13 to 14 cents a pound contained for the 4 to 6 per cent carbon grade, the higher price being on the smaller tonnage contracts. The tungsten market remains quiet. Concentrates are firm at $7.50 a unit for good grade Chinese wolframite. Ferrotungsten is quoted 92 to 95 cents a pound contained; powder, $1 a pound. Ferro-

vanadium prices are unchanged at $3.50 to $4 a pound contained, according to quantity and analysis. Buying continues at a good rate, a feature being the development of demand for locomotive forging steels.

Sheet Mill Operations in Valley Show Gain

Youngstown, O., Dec. 12.—Last week's loss of 2 per cent in sheet mill operations was regained by the resumption of three units this week bringing the rate of activity to 87 per cent. Schedules this week include the operation of 28 mills at the Brier Hill Steel Co.; 15 each at the Youngstown Sheet & Tube Co. and the Trumbull Steel Co; 10 at the Newton Steel Co.; 8 each at the Republic Iron & Steel Co., the Mahoning Valley Steel Co. and the Sharon Steel Hoop Co.; and 5 at the Falcon Steel Co., or an aggregate of 97 of the 111 sheet mills in the Mahoning valley. Open-hearth activity is on a 78 per cent basis, the same as one week ago, representing 40 of the 51 independent units in the district.

The blowing out of the Tod stack of the Brier Hill Steel Co. last week resulted in the reduction of blast furnace operation in the valley from 82 to 79 per cent. Twenty-two stacks are active distributed 6 at the Ohio works of the Carnegie Steel Co.; 5 at the Youngstown Sheet & Tube Co.; 4 at the Republic Iron & Steel Co.; 2 at the Brier Hill Steel Co.; and 1 each at the Trumbull Steel Co.; the A. M. Byers Co., the Struthers Furnace Co., the Sharon Steel Hoop Co., and the M. A. Hanna Co. at Leetonia, O.

Miscellaneous operations remain unchanged over the week with both plate mills of the Brier Hill Steel Co. active; six finishing and five pipe mills and the bessemer department at the Republic Iorn & Steel Co.; 16 hot tin mills at the two plants of the Trumbull Steel Co.; and nine pipe mills, a bar mill and the bessemer department at the Youngstown Sheet & Tube Co.

Blast Furnace Operation in Pittsburgh Gains

Pittsburgh, Dec. 12.—With the second blast furnace in operation at the Riverside works at Benwood, W. Va., of the National Tube Co., that interest now has all 11 blast furnaces active and for the first time in many months is upon a 100 per cent blast furnace basis. The steel department at Benwood shortly will be running full, bringing average steel operations up to in excess of 80 per cent of capacity. Other pipe companies likewise are running heavily, the general average being 75 or 80 per cent.

But for slight interruptions, cold-drawn steel plants are upon a 90 to 100 per cent basis. Other finishing mills, wire nails, spike, etc., are operating similarly and last week the American Sheet & Tin Plate Co. reached 85 per cent of capacity in sheet mills, and a little less than 75 per cent in tin plate mills. The general average among independent sheet producers is 80 or 85 per cent, with a slightly higher average among the tin plate producers.

The Nonferrous Metals

Copper and Aluminum Strong—Outlook Good in Several Lines—Tin Erratic—Zinc Quiet Except Export

	Copper Electro delivered	Copper Lake delivered	Spot Straits New York	†Lead New York basis	Zinc St. Louis basis	Spot† aluminum	Spot antimony	Nickel spot
Dec. 6.....	14.00	14.00	37.00	7.30	7.20	22.00	6.40	32.00
Dec. 7.....	14.00	14.00	37.37½	7.30	7.30	22.00	6.37½	32.00
Dec. 8.....	14.00	14.00	37.50	7.30	7.30	22.00	6.37½	32.00
Dec. 11.....	14.00	14.12½	37.50	7.30	7.25	22.00	6.37½	32.00
Dec. 12.....	14.00	14.12½	37.12½	7.27½	7.25	22.00	6.37½	32.00

†Outside market quotation.

NEW YORK, Dec. 12.—That the first half, at least, of 1923 will be a period of active business has become a general conviction in the metal industries and buying and producing programs are being arranged accordingly. Many metals and metal products are used in various forms in the automobile and building trades and these lines continue especially busy. Metal prices have been firm to strong, with considerable contracting for first quarter requirements, particularly of copper and aluminum.

Electrolytic copper prices have become firmly established at 14.00c, delivered, for prompt and first quarter deliveries and a large business was done at this price for these positions yesterday and today. Fabricators have large orders on books and have been covering their copper requirements, thereby demonstrating their confidence in the 14c market. The reported acquisition of Chile by Anaconda Copper Mining Co., thereby removing the competition of the lowest cost producer, apparently supplied the needed stimulus to the market. Export sales have been fair, despite an advance of ⅛c in the export price to 14.15c to 14.20c, c.i.f. foreign port. Casting copper prices have been advanced to 13.50c to 13.60c, refinery, with continued large business. Lake copper is up ⅛c to 14.12c, delivered.

An active export business was done the past week in slab zinc, the shortage abroad still being pronounced. Fully 3000 tons were sold for export in the week ended Dec. 8. Domestic inquiry, particularly from the galvanizers, has been slow and there are indications that a slight increase in stocks took place in November, due to increased production. Prime western zinc prices have ranged between 7.25c and 7.35c, East St. Louis, the past week. High grade has been selling at 8.25c, delivered.

Lead producers have been pressed to make deliveries under existing contracts, but new business is light. Offerings are equally light, so prices are holding steady. The American Smelting & Refining Co.'s official prices remain at 7.10c, New York, 6.90c, East St. Louis. Outside market prices are at 6.97½c, East St. Louis and 7.25c to 7.30c, New York. January shipment lead has sold at 7.25c, New York.

The tin market has continued to move eratically and to the bewilderment of the New York trade, which has been unable to gage the speculative trend at London. Fluctuations of £2 a day in London have been frequent, as the market there appears to be well under the control of a speculative clique. Straits tin has moved upward from about 36c to 37.50c. Ninety-nine per cent has been quoted about 1c under Straits. Demand from American consumers has continued light.

Aluminum prices have been strong, all the leading importers having sold up pretty well for the first half of 1923. The import quotations now range from 22.50c to 23c, New York, for 98 to 99 per cent virgin ingot, as against 24c, delivered, quoted by the leading interest. There is a freight rate of slightly over ½c a pound from New York to Detroit.

The antimony market has shown an easy tendency, being offered without buyers at 6.37½c, duty paid, New York, for spot carlots, and at 4.37½c in bond, dutiable at 2c a pound, for importation.

Mill Products

Base prices cents per pound, f.o.b. mill

SHEETS	
Copper, hot rolled 24 oz., min	31.50
High brass	18.50
Zinc, ga. 9 to 18 (plates ½c less)	9.25 to 9.50
Lead, full sheets (cut, ¼c more)	10.25
Aluminum, base 18 ga. and up	36.40
SEAMLESS TUBES	
High brass	23.00
Copper	24.75
RODS	
High brass, round, ⅜ to 2½ inch	17.00
Naval brass rod	19.00 to 19.50
WIRE	
Copper	15.50 to 16.00
High brass	19.00

Old Metals

Dealers' buying prices cents per pound

HEAVY RED BRASS	
Cleveland	9.00 to 9.50
New York	8.50
Chicago	9.50
HEAVY YELLOW BRASS	
New York	6.25 to 6.50
Chicago	7.50
Cleveland	6.00 to 6.50
ZINC	
New York	4.00 to 4.25
Cleveland	4.00 to 4.50
HEAVY COPPER AND WIRE	
Cleveland	11.25 to 11.75
New York	11.00 to 11.00
Chicago	11.75
RED BRASS TURNINGS	
New York	7.75 to 8.25
Cleveland	8.00 to 8.00
Chicago	8.50
YELLOW BRASS TUBING	
Cleveland	6.00 to 6.00
NO. 1 BRASS ROD TURNINGS	
Cleveland	6.00 to 6.50
New York	6.75 to 7.00
Chicago	7.50
ALUMINUM BORINGS	
Cleveland	7.00 to 9.00

Cars Released

By Cancellation of Service Orders—All Open-Top Equipment Available

Washington, Dec. 12.—Cancellation of the interstate commerce commission's service orders No. 24 and 25 as of midnight Dec. 11 has had the effect of terminating all priority in movement of commodities and of lifting all restrictions upon the use of open-top equipment. Service order No. 22, directing the movement of freight by the shortest route, continues in effect but is of no practical interest to industry. Four small service orders compelling the movement of small lots of coal expire automatically. As the commission states, the emergency which prompted it to issue the service orders, beginning on Sept. 12, has been "measurably relieved" and normalcy obtains once more so far as the use of equipment is concerned.

The closing of navigation on the Great Lakes and the increased stocking of supplies by bituminous consumers has relieved the coal situation, and as a further indication of this the organization of Federal Fuel Distributor Spens disbands on Jan. 1. Freight loading is rapidly decreasing, although still of record volume for this period of the year, and with it the car shortage is receding. Loading of revenue freight in the week ended Nov. 25 dropped to 955,495 cars and in the week ended Dec. 2, on account of the Thanksgiving holiday, will be seen to be a good distance under the 800,000-car mark. The net car shortage on Nov. 30 was 129,634, or nearly 55,000 under the peak reached in the last eight days of October.

Through the week ended Nov. 25 the railroads had loaded 39,514,599 cars of revenue freight for the year, compared with 35,942,733 cars in the same period of 1921. October loading was far in excess of that of last October, yet the net operating income of Class 1 roads in October was 4.05 per cent, against 2.88 in September and 5.01 in October, 1921. October expenditures for maintenance of equipment mounted to $130,212,000, or 16.2 per cent over last October. Maintenance of way cost in October was $68,800,000, or 5 per cent less than that of last October.

The President's remarks upon the transportation situation in his message to congress last Friday are regarded more in the light of aspirations than of recommendations. No chance exists of the Transportation act being amended at this session of congress, and if the act is revised after March 4 it is more likely to be in the nature of the emasculation demanded by the radical-farmer bloc. It may well prove that the President's proposals for strengthening the labor situation by transferring authority over wages and working conditions to the commerce commission and making decisions binding will neutralize the radical-farmer propaganda against the act and serve to preserve the present status.

In its annual report to congress for the year ended Oct. 31 the interstate commerce commission refers to the general rate reduction of July 1 and continues:

"The tonnage moved by the railroads has been steadily increasing in recent months until, at the end of the period covered by this report, the traffic is almost equal to the largest ever handled by our railroads. Manifestly the existing rates are no longer interfering with the free flow of commerce as a whole, whatever may have been the situation prior to the reductions of July, 1922. Little opportunity has been afforded for determination of the effect of the reduced rate level upon the net earnings of the carriers because of freight congestion and other abnormal conditions which have resulted from the coal strike, the shopmen's strike, and other causes.

Railroads File Briefs in Ore Rate Case

Washington, Dec. 12.—Acceptance of the tentative report of an examiner which would mean retention of the present freight rates on iron ore from the Minnesota ranges to Two Harbors, Duluth, Superior and Allouez is urged in briefs filed with the interstate commerce commission by the Chicago & North Western, Chicago, Milwaukee & St. Paul and Soo lines. The railroads' briefs attack the exceptions made to the examiner's recommendation by the independent iron ore producers and shippers who sought reductions in ore rates in the Adriatic Mining Co. complaint.

Makers of Sheets Adopt New Lists of Extras

Revised miscellaneous extras on sheet and tin mill products recently put out by the American Sheet & Tin Plate Co. are being adopted with some variations by independent mills. The new extras of the leading producer established as of Nov. 27 were from $1 to $4 per ton lower in a number of items than those put into effect in the revised list by various independent mills as of Sept. 15. The tendency now is toward a uniform listing of extras by the independents and by the leading interest on the greater part of the more important sheet and tin mill products and operations. However, some variations, principally in classification still prevail between the lists as at present followed by leading independent mills and those of the largest producer.

The complete new extra list of the American Sheet & Tin Plate Co. in cents per 100 pounds on miscellaneous sheet and tin mill products which now is being followed by a number of the independent producers is as follows:

SHEET MILL PRODUCTS

Full cold-rolled and annealed	$0.25
Single pickled, 1-pass, cold-rolled and annealed	.50
Full pickled, full cold-rolled and annealed	.75
Blue elbow stock	.25
Blue stove pipe stock, 25 gage and lighter	.20
Blue stove pipe stock, 25 gage and lighter, stretcher leveled	.45
Blue stove pipe stock, 24 gage and heavier	.50
Blue stove pipe stock, 24 gage and heavier, stretcher leveled	.75
Blue range steel	.70
Blue range steel, stretcher leveled	.95
Black range steel	.50
Black range steel, stretcher leveled	.75
Enameling stock, pickled and annealed finish	.50
Full cold-rolled japanning stock	.25
Full cold-rolled blued stove pipe stock	.40
Full cold-rolled blued stove stock	.60
Bow socket stock	.75
Locker stock	.25
Special locker stock	.70
Metal furniture stock, first grade	1.00
Nickel plating stock, oiled	1.50
Open-hearth fender and hood stock	.25
Open-hearth crown fender stock	.50
Single pickling	.45
Deep drawing or stamping quality	.25
Extra deep drawing quality	.50
Extra box annealing or reannealing	.15
Oiling	.10
Deoxidizing	.15
Lime finish	.10
Roller leveling	.10
Patent or stretcher leveling, not including resquaring	.25

The variations in the list of certain independent producers from that of the American Sheet & Tin Plate Co. with some additional items are:

TIN MILL EXTRAS

Show card stock	.75
Tea tray stock	.75
Milk can stock	.75
Ferrotype stock	1.50
Enameling stock	.40
Nickel plating stock	1.00
Blued stove pipe stock, 25 gage and lighter	.20
Cold-rolled blue	.40
Tin mill blue or blue elbow stock	.25
Pickled and annealed	.40
Single pickled, cold-rolled and annealed	.50
Single pickled, full cold-rolled and annealed	.60
Hot-rolled, pickled and annealed	.45
Special japanning stock, full cold-rolled, reannealed, roller leveled	.60
Metal furniture stock, second grade	.85
Regular auto body stock	22 gage base
Deep drawing auto body stock	25c over base
Extra deep drawing auto body stock	50c over base
Flat fender, hood, door and apron stock	25c over base
Crown fender and cowl, deep drawing stock	50c over base
Crown fender, cowl and radiator casing, extra deep drawing stock	75c over base
Deoxidizing	.25
Resquaring	5 per cent
Full finished black plate	.50

M. A. Hanna Co. Formed

M. A. Hanna & Co., Cleveland, agents for iron ore and coal properties, blast furnaces and lake shipping, has been incorporated as the M. A. Hanna Co., capitalized at $3,000,000. The company, bearing the name of one of its founders, the late Senator M. A. Hanna, has been operating as a partnership. Among the partners are Leonard C. Hanna and H. M. Hanna Jr., who appear as incorporators in the application for an Ohio charter.

Slight Gain in Alien Arrivals

Net Increase in Male Population in First 10 Months of 1922 Is 92,735, Including Many Boys—President's Failure To Refer To Quota Problem Gives Strength to Opponents of Proposed Amendments

WASHINGTON, Dec. 12.—In October the net increase in the number of aliens in the United States was 46,937, a gain of more than 4600 over September, and more than in the entire first six months of the year, the department of labor states. October arrivals totaled 54,129 and departures 7192. In the first ten months of this year the net gain in aliens thus has been 196,682. The ebb and flow of immigration and emigration since June, 1921, has been as follows:

Month	Immigrants	Emigrants	Excess of Immigrants
October	54,129	7,192	46,937
September	49,881	7,527	42,354
August	42,735	10,448	32,287
July	41,241	14,738	26,503
June	24,776	12,537	12,239
May	24,169	12,025	12,144
April	18,967	13,232	5,735
March	14,803	8,269	6,534
February	10,792	7,063	3,729
January, 1922	15,928	7,708	8,220
December	22,689	19,236	3,653
November	34,488	16,256	18,232
October	33,261	22,990	10,271
September	36,217	28,555	7,662
August	37,902	27,615	10,287
July	35,564	23,226	12,338
June, 1921	46,093	22,937	23,156

Of the 54,129 arrivals in October 28,798 were males. Of the 7192 departures in that month 4785 were males. The net gain in males in October thus proved to be 24,013, scarcely more than half of the total net gain of 46,937, showing that the number of women and girls coming to America remains unusually high. This gain of 24,013 in males is far from picturing the added supply of common labor, as many are boys. In the ten months ended with October the gain in male alien population has been 92,735, many of them boys. The following table gives the October immigration from and emigration to the principal countries figuring in immigration reports:

From	Immigrants	Emigrants	Net gain
Austria	1,014	25	989
Hungary	966	121	845
Czechoslovakia	2,629	206	2,423
Germany	3,776	135	3,641
Italy	7,874	2,180	5,694
Rumania	1,388	128	1,260
Russia	1,845	153	1,692
Sweden	1,520	65	1,455
England	2,414	556	1,858
Ireland	2,385	83	2,302
Scotland	2,277	67	2,210
Yugoslavia	1,195	219	976

Similar data for the period July-October is given in this table:

From	Immigrants	Emigrants	Net gain
Austria	3,388	121	3,267
Hungary	3,952	598	3,354
Czechoslovakia	9,730	1,295	8,435
Germany	11,381	881	10,500
Italy	31,843	11,560	20,293
Rumania	6,206	686	5,520
Russia	6,767	1,681	5,086
Sweden	4,616	372	4,244
England	8,201	2,781	5,420
Ireland	6,292	856	5,436
Scotland	5,714	429	5,285
Yugoslavia	4,021	1,213	2,808

Many protests from individuals and associations against the 3 per cent act are coming to the house immigration committee, but the committee is evidencing no disposition to move. On Friday, Dec. 15, the committee will hear representatives of the employing tailors, who are blaming the restrictive act for a shortage of tailors and consequent high prices of clothing. The President's hesitant observations upon the matter of immigration in his message to congress, his advocacy of a registration system and his aloofness from any comment upon quotas, have not served to impress the house committee with the necessity for action.

Secretary of Commerce Hoover in his annual report to congress commented on the coming inability of the miners to recruit their ranks if the bars are not lifted. Secretary of the Treasury Mellon advocated broadening of the act as a means of refilling the common labor reservoir. Secretary of Labor Davis, in his annual report, is consistent with his policy of not amending the act as to quotas but of registering aliens and improving the lot of those now here. Secretary Davis would have all of the 7,000,000 aliens in the United States enrolled, not as an espionage proposition, he insists, but to bring the aliens into school. He also strongly urges physical and mental examination of aliens before permitting them to embark.

The house committee has before it the bill of Representative Rainey, Democrat, of Alabama, reducing the number of permissible aliens in any one year to 2 per cent of the number in the United States in 1910. This would cut present quotas one-third, or down to a total of 238,000 per year. The bill probably will not receive consideration at this session.

Fact Finders Trying To Avert Coal Strike

Washington, Dec. 12.—In star-chamber sessions the federal coal fact-finding commission this week is conferring with representatives of bituminous coal operators and of miners in an effort to bring both factions together before expiration of the present wage pact on March 31. Failure of the conferences to date to reveal a common ground for negotiation has prompted the commission to permit its investigative work to proceed of its own momentum and to turn its energies in the direction of averting a threatened strike.

The coal commission in a statement today states that its studies already have convinced it that the bituminous industry is tremendously overdeveloped and that waste on a country-wire scale is rampant. One of its chief problems is to deflate the industry. The commission says:

"How great is the present inflation of the industry cannot be stated exactly at this time but unquestionably the inflation is excessive. Estimates of the excess mine capacity range from 30 to fully 60 per cent above the country's normal demand.

"How to deflate the coal industry is one of many problems before the commission, and its reports may be expected to present facts bearing on this question. It seems plain enough that the industry should not be further inflated by opening new mines.

"If the public can appreciate the strength of the evidence already available on this subject of overdevelopment, refusal to invest in new coal mining ventures under present conditions will be recognized as both good business and good citizenship. It is plain enough that the country needs not more coal mines but more work for the coal mines we already have. One potent reason that coal is not cheaper to the consumer is that he is supporting a vast surplus of investment and capacity. The large excess capacity cannot for long lower the price of coal, however, simply because that condition of things is wasteful."

Building 197 Steel Ships

Washington, Dec. 12.—On Nov. 1 American shipyards were building or had under contract 197 steel vessels of 258,373 gross tons, compared with 198 vessels of 255,431 tons on Oct. 1, states the department of commerce. This is exclusive of all government and shipping board work. The largest tonnage building or under contract on Nov. 1 was 53,000, by the American Shipbuilding Co., Cleveland. The American Bridge Co., Ambridge, Pa., reported 36,082 tons; the New York Shipbuilding Corp., Camden, N. J., 28,790 tons; the Union plant of the Bethlehem Shipbuilding Corp. at San Francisco 27,900 tons and the Sun Shipbuilding Co., Chester, Pa., 14,150 tons.

Ohio Founders Discuss Problems

Annual Meeting of Ohio State Foundrymens' Association Marked by Interest in Papers and Reports on Business Management, Operation, and Casting Practice—Evils of Price Cutting Are Outlined

REPRESENTATIVE foundrymen from practically every section of the state attended the annual convention of the Ohio State Foundrymen's association held in Middletown, O., Dec. 7 and 8. The program included business and educational sessions followed by a banquet at the new Hotel Manchester on the first day, supplemented on the second day by a visit to and through the extensive plant of the American Rolling Mill Co. Luncheon was served in the office cafeteria after which the members were driven to Cincinnati where the local foundrymen provided further entertainment.

A. J. Tuscany, secretary-manager of the association, in his annual report directed attention to the fact that during the past year many business men had considered it advisable to relinquish membership in their various associations. In this respect the Ohio State Foundrymen's association had cause for congratulation in that only four members had resigned, a loss that was more than offset by a gain of 35 members. Outstanding features of constructive work accomplished during the year included distribution of cost finding statistics with supplementary information on how the system could be applied in each member's individual plant. Uniform trades customs set of specifications had been placed in force, defining the relative duties and obligations of buyer and seller. Another set of specifications had been adopted in connection with pig iron contracts, designed to eliminate misunderstandings between foundrymen and the various interests supplying this product. One of the most important measures had been the engaging of a consulting actuary to interpret the workman's compensation law and to furnish expert advice on any proposed amendments or changes in the present status of this legislation. Connection had been secured with various organizations engaged in supplying information on credit ratings, financial and general business trend and outlook. A monthly bulletin is issued showing the amount of iron purchased and contracted for, the labor situation, equipment available for exchange, list of executives, superintendents and foremen either at liberty or contemplating a change. Intimate touch is maintained with industrial legislation. A trouble department is available for the benefit of those who desire specific information on any phase of foundry operation, maintenance or administration.

George K. Elliott, Lunkenheimer Co., Cincinnati, presented his views on the relation of the electric furnace to cast iron. In a brief historical sketch he traced the development of this type of melting medium in Europe, of its later adoption in the United States and to the fact that out of the approximately 1000 electric furnaces now in operation throughout the world 333 are in the United States.

Before touching on the subject of melting iron in the electric furnace Mr. Elliott went into considerable detail on the difference between basic and acid lined furnaces and the reactions that take place in the manufacture of steel.

Cupola Still Supreme

Either hot or cold metal may be charged into the electric furnace, but since the electric furnace is relatively more expensive to operate than the cupola, clearly it is the part of economy to melt the iron in the cheapest medium and then if necessary, refine and superheat it in the electric furnace. This is known as the duplexing process and is the method practiced in the plant with which Mr. Elliott is connected. As it leaves the cupola the iron is perfectly satisfactory for a wide range of castings. Its only drawback is that the charge cannot be manipulated between the time it is placed in the furnace and the time it is tapped into the ladle. In addition, certain inexorable changes take place. For example the silicon content will be lowered approximately 25 points, the manganese will be lowered an appreciable amount, usually about 20 points, depending on the component elements of the charge; under certain conditions the carbon content will be increased and the same holds true for the sulphur. The only element that remains constant is the phosphorus. Touching on the relative cost of actually melting the metal Mr. Elliott stated that one ton of coke at present Cincinnati quotation of $15 will melt as much iron as 4000 kilowatt hours of electric current at 1¾ cents per kilowatt hour, or $70.

In summing up and later in answering questions from the floor, Mr. Elliott stated that the cost of operating an electric furnace depended on many variables including whether the furnace was operated continuously.

Pat Dwyer, engineering editor, *The Foundry*, in a characteristic address enlivened by many humorous illustrations discussed some of the practical features of cupola operation. He dwelt on the utter lack of uniformity that seems to prevail among foundrymen on a process amenable to standardization. Iron and coke are wasted and unsatisfactory melting conditions obtain to a great extent, not from lack of knowledge on the part of the executives, but on account of lack of close, intelligent supervision.

"Developing Foundry Material" was the subject of a paper presented by J. H. Hogue, foundry superintendent, French Foundry Co., Piqua, O. Mr. Thompson, Dayton Pneumatic Tool Co., Dayton, O., read a paper on the proper maintenance of pneumatic tools.

Frank D. Chase, Frank D. Chase Engineers, Inc., Chicago, delivered an address illustrated by lantern slides at the session following the banquet Thursday night.

For the ensuing year F. W. Huber, foundry manager, American Rolling Mill Co., Middletown, O., was re-elected president; J. H. Bruce president Bowler Foundry, Cleveland, vice president; Walter Seelbach, manager Walworth Run Foundry, Cleveland, treasurer. A. J. Tuscany was re-elected secretary-manager. The board of administration is made up of 15 members elected for a three year term with a proviso that the five senior members retire each year. The retiring members for this term are replaced by F. W. Huber, foundry manager, American Rolling Mill Co., Middletown, O.; G. W. Piehl, Wessling Bros., Cincinnati; Walter Seelbach, foundry manager, Walworth Run Foundry, Cleveland; W. E. Matthews, foundry manager, Carroll Foundry & Machine Co., Bucyrus, O.; L. H. Wise, Dockray Foundry, Zanesville, O.

Coast Business Is Active

November Trade Sets Record for Year—Plate Booking Is Extremely Heavy—Large Structural Shape Award Made

San Francisco, Cal., Dec. 7.—Several of the independent mill representatives state that business during November was the largest in over a year and a half and that indications all point to a continuance of the present healthy demand. While there has been no outstanding feature in the local iron and steel market during the past week, numerous orders have been placed which in the aggregate total a satisfactory volume.

Pig Iron and Coke

The pig iron and coke market has developed nothing of interest of late and no sales are reported other than an occasional carload. Foreign iron still remains the dominant factor, being quoted at around $28 to $31 a ton c.i.f. Pacific Coast ports, duty paid. On No. 2 Southern foundry, $23 furnace is the best price reported. The rail rate from Birmingham to Mobile is $2.47½ a gross ton and the water rate from Mobile to Coast points is $6 a ton, which means that $32 is about the best c.i.f. price obtainable.

Bars, Plates and Shapes

Local bar mill operators report a better demand for merchant steel bars, though no outstanding orders have been reported booked. The three local mills have two open hearths each in operation this week, making a total of six out of twelve running. Prices for first quarter on both merchant and concrete bars remain unchanged from those of the fourth quarter. Merchant material is quoted at 2.70c f.o.b. San Francisco while reinforcing bars are held at 2.95c f.o.b. San Francisco for 250-ton lots.

On cold-drawn material, 2.50c base Pittsburgh is the minimum being quoted. Demand is only fair, however. Several jobbers, believing that the present 2.50c price will shortly disappear, have come into the market for some fair sized tonnages.

While new business in hoops and bands is being placed, the quantities involved are small. The minimum market price here is 2.90c base Pittsburgh. In many instances 3.00c base is being obtained for the smaller sizes and as high as 3.25c in some cases.

Several rivet makers have extended fourth quarter prices on structural and boiler rivets and are quoting 3.00c and 3.10c base Pittsburgh, respectively, other makers, on the other hand are quoting 3.15c and 3.25c. A survey recently made by one rivet mill representative showed local stocks to be badly broken. The Southern Pacific Co. has closed for 500 kegs of track bolts, ⅞ x 4½ inches.

New bookings of plates together with specifications against old contracts during the past month were extremely heavy. Prices remain unchanged and while 2.40c to 2.55c appears to be the general run, 2.35c can be obtained on desirable tonnages. One importer offered foreign sheets at 2.25c c.i.f. San Francisco duty paid but as far as known no sales were made. Standard Oil Co. has taken no action on the 1900 tons inquired for last week. The Union Construction Co. secured one 80,000-barrel tank for the Vintura Oil Co. and one 80,000-barrel tank for the Roseberg Oil Co., involving a total of 500 tons. The Western Pipe & Steel Co. was awarded a 9½-foot pipe line for the Hetch Hetchy project involving 125 tons. Bids will be opened on Dec. 26 for a pipe line for the city of Napa involving about 150 tons of plates.

The largest structural shape award in over two months was placed this week with the Minneapolis Steel & Machinery Co. and involved 2500 tons for the Continental National Bank & National Bank of Republic, Salt Lake City.

Other Finished Material

Consumers of sheets have come into the market for some fair sized tonnages of galvanized material for first quarter shipment. It is understood that the leading interest is out of the market in this district. At least one independent sheet producer has withdrawn its 4.35c, base Pittsburgh price and is now asking 4.50c. A number of two and three hundred ton lots were placed this week at 4.35c for galvanized.

Only two awards for cast iron pipe have been made during the last two weeks. The United States Cast Iron Pipe & Foundry Co. secured 2560 tons of 8 and 24-inch for Los Angeles and the National Cast Iron Pipe Co. was awarded 265 tons of 16 and 20-inch for Los Angeles. Demand from private sources is quiet. Bellingham, Wash., will open bids on Dec. 21 for 385 tons.

Standard pipe and oil country goods continue in heavy demand. The Associated Oil Co. has an inquiry out for 26 miles of 8-inch pipe involving about 2000 tons. Oilfield operations reported to the state oil and gas supervisor for the week ending Dec. 2, show 33 new wells started as compared with 31 the preceding week. Total new wells this year to date are 1341; total same date last year 1210.

Old Material

The movement of melting steel has been of heavy proportions. While the price remains unchanged at $12.50 to $13 a gross ton delivered mill, lower prices are expected in the near future. The PARIS CITY is in port from Lima, Peru, with 1600 tons of railroad scrap aboard. The BADGER CALIFORNIA is at San Pedro unloading 500 tons of cast iron scrap and 1800 tons of melting steel. Cast scrap is holding at from $25 to $27 a net ton but sales have not been heavy.

Warehouse

Warehouse interests report November sales slightly in excess of those for October. Sheets, nails and pipe are perhaps the most active items at present. No changes in out-of-stock prices have occurred of late.

New Route to Southwest

A steamship service between Port Newark, N. J. and Port Arthur, Tex., has been inaugurated by the Trans-Marine Corp. A new and expeditious route thereby is opened between the Pittsburgh-Youngstown-Johnstown and the Southwest regions. Through rates eventually will be established on the same basis as now are in effect via other steamship lines to various gulf ports and to interior Texas, Oklahoma or Louisiana points. The first sailing will be from Port Newark, N. J. for Port Arthur, Tex., Dec. 16. The Trans-Marine Corp. has 32 first class steel boats that will be put into this service as the needs may require. A port-to-port tariff publishing rates on the same basis as now applies between ports of Galveston and New York have been issued by the Trans-Marine Corp.

To Take Over Foundry

The Eastern Steel Castings Co., Avenue L and Edward street, Newark, N. J., is being organized to take over early next year the business of the Bayonne Steel Castings Co., Bayonne, N. J. The new company is headed by William D. Sargent, now president of the Bayonne Steel Castings Co. The company will have a much larger plant, equipped for the making of both open-hearth and electric steel castings.

Organize Bolt Merger

The American Bolt Corp. has been organized under the laws of Delaware for the purpose of acquiring and consolidating several bolt and nut companies under one management. The companies included are: the Standard Bolt Corp. of Columbus, O.; the Bayonne Bolt & Nut Co. of Bayonne, N. J.; the Michigan Bolt & Nut Co. of Detroit and the Boss Nut Co. of Chicago.

Plans No Toronto Plant

Officials of the Bethlehem Steel Corp. declare there is no truth in the report that it is considering the establishment of a branch plant at Toronto. The plant of the Baldwins Canadian Steel Corp. at Toronto has been mentioned in connection with the reported plans of expansion in Canada by the Bethlehem corporation.

British Production Is Expanding

Eleven Blast Furnaces Started Up in Month—American Inquiry Falling Off—Belgians Take 30,000-Ton Argentine Rail Order—100,000 Tons Still Pending—Sheet Output Heavy

Iron Trade Review Staff Cable

European Headquarters,
IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

Sterling—$4.59

LONDON, Dec. 11.—Production of pig iron in Great Birtain in November amounted to 495,000 tons, 162 stacks being in operation on the last day of the month compared with 151 stacks, Oct. 31. Production in October was 481,500 tons; in September, 440,000 tons, and in August 411,700 tons.

The British output of steel ingots and castings in November totaled 585,000 tons compared with 565,200 tons in October, 560,000 tons in September, and 528,000 tons in August.

A Derbyshire furnace sold 500 tons of special foundry iron to the United States at £4 10s ($20.66) f.o.b. American inquiry for pig iron generally is much less than it has been in recent weeks. A further moderate expansion in the British pig iron market is noted, mainly for steelmaking iron. Two more stacks in the Barrow-in-Furness district are being blown in.

It is learned that British shipbuilders' recent purchases include an aggregate of 40,000 tons of plates. Prices of semifinished material and scrap show a sharp recovery. Continental competition is weaker. Belgian makers have sold billets at £5 3s ($23.64) and French producers have sold blooms at the same figure, both f.o.b. Antwerp. The Belgian Societe Sambre et Moselle has finally secured an order for 30,000 tons of rails for Argentina. One hundred thousand tons additional for Argentina are pending. German makers are reported low bidders for 20,000 tons of rails for Portugal.

Welsh tin plate production is at 85 per cent of capacity. Sheet mills are now the most active since the end of the war.

Condition of British Trade Is Improving

European Staff Special

Office of IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,

Sterling—$4.51

BIRMINGHAM, Eng., Dec. 1.—Further progress has been made in trade recovery but the upward movement still lacks vigor. Improvement in the average selling price of iron in the Black country has been sufficient to give the men an advance of 2½ per cent in wages. This is the first recovery of prices in two years and is probably partly due to the large proportion of best iron sold as compared with common.

The railway companies have made a slight concession in railway rates, the iron and steel trade on this occasion being singled out for exclusive benefits. The changes involve small concessions on iron ore, limestone as well as coal and coke and under Class C in the transportation of finished material.

Middlesbrough has put in two additional furnaces to produce hematite. Several are being placed in readiness in Scotland in addition to the four lighted at Wishaw. On the West Coast there are 16 furnaces in operation, the largest number since the beginning of 1920. The optimists in that area look forward to the addition of four operating furnaces by the end of the year. The American demand has weakened slightly but all other buyers are making demands upon the furnaces in the Barrow district. That area has the distinction of obtaining an advance of 5s ($1.12) per ton, making west coast mixed numbers £5 10s ($24.20), delivered in Sheffield. The improvement there is particularly encouraging since the west coast reflects promptly any improvement in Sheffield.

The finished steel trade is rather quiet in that area but the orders are steadily accumulating and it is hoped will soon bring into operation some of the mills now unemployed.

Middlesbrough is getting a share of the new business, two furnaces having been lighted to deal with hematite. A very encouraging feature is the growing activity in Scotland where every day brings some addition to shipbuilding orders. That area has booked business in the way of steel for bridges, and engine shops are getting busy on locomotives and wagons. There is still a great deal of room for improvement in the shipbuilding trade and the makers of boiler plates have found it necessary to reduce their price 10s ($2.25) per ton to their home customers.

The iron and steel trade is specially interested in the appeal made by Bonar Law to the railway managers to speed up their equipment and extension programs. The proposals have been received favorably and the railway companies may place orders early. The buying movement has already begun, and very likely would have been carried further but for the desire to wait until the various amalgamations were completed.

Sheffield houses have increased the prices of their basic billets 10s ($2.25) per ton, making the figure £8 10s ($38.33). Efforts have been made to induce steelmakers to make concessions, but the proposal has been met with refusals. The exception is in the case of boiler plates which in Scotland have been reduced 10s ($2.25) per ton.

The English market has been practically unaffected by continental price wobblings. A few Midland users of billets purchased during the short period when, owing to the slump in currency, Belgian billets could be bought at £6 ($27.06) per ton. They have now recovered to £6 10s ($29.31). The only buyers, however, are users who are not urgently wanting supplies and can afford to wait.

English makers are undisturbed by these fluctuations and where they do not increase prices, hold out firmly for £7 ($31.54) to £7 2s 6d ($32.13) for ordinary soft billets. Similarly the South Wales price for sheet and tin bars is kept at £7 7s 6d ($33.26) with a rebate of 7s 6d ($1.69). A fair amount of business is being done with an upward tendency in prices.

The foundries are taking a little more pig iron. Some well known engineering firms experienced the most active period of the year during November and it appears that the blight which has remained on the industry since the strike of the early summer is passing away.

The structural engineers are busier although the big jobs are still on the way. December is not an encouraging month as a rule for new work and the figuring in progress is mostly prospective for the new year. Several industries around Birmingham using finished steel are taking better quantities from the works.

The Staffordshire iron trades show little change and are still subject to keen competition from Belgium. Nut

Current Iron and Steel Prices of Europe

British Market

Home Market Prices. Gross Tons at Works or Furnace.

Corrected to Date by Cable

	$	£ s d
SEMIFINISHED STEEL		
Billets, soft steel	30.78	6 15 0
Sheet bars	30.78	6 15 0
Wire rods	44.52	9 15 0
FINISHED STEEL		
Steel bars, England, ½ to 3-inch	39.94	8 15 0
Steel bars, England, ½ to 3-inch, for export	35.36	7 15 0
Plates, ship, bridge and tank, England	39.03	8 10 0
Plates, ship, bridge and tank, England, for export	36.64	8 0 0
Plates, ship, bridge and tank, Scotland	37.78	8 5 0
Plates, ship, bridge and tank, Scotland, for export	35.80	7 17 6
Beams, England	37.78	8 5 0
Beams, England, for export	35.36	7 15 0
Beams, Scotland	36.64	8 0 0
Beams, Scotland, for export	34.26	7 10 0
Sheets, black, 24 gage	48.09	10 15 0
Sheets, galvanized, 24 gage	80.15	17 10 0
Rails, 60 lbs. and over	36.64	8 0 0
Rails, 60 lbs. and over, for export	33.20	7 5 0
Tin plate, base box, 108 lbs.	4.33	0 19 9
Steel hoops	46.94	10 5 0
Steel hoops, for export	45.80	10 0 0
PIG IRON		
Hematite, East Coast, Mixed Numbers	21.24	4 13 6
Hematite, West Coast, Mixed Numbers	22.12	4 17 6
Basic, Middlesbrough	18.32	4 0 0
No. 3 Foundry, Middlesbrough	21.02	4 12 6
No. 3 Foundry, Derby, Leicester, Nottingham	18.82	4 2 6
No. 3 Foundry, Northamptonshire	18.32	4 0 0
No. 3 Foundry, Staffordshire	18.32	4 0 0
No. 3 Foundry, Scotch	22.12	4 17 6
Ferromanganese, 76 to 80 per cent.	68.70	15 0 0
Ferromanganese, 76 to 80 per cent, for export	65.26	14 5 0
COKE		
Yorkshire furnace	5.08	1 2 6
Yorkshire foundry	6.18	1 7 6

Where no separate export prices are given, same quotations apply to domestic and foreign business.

German Market

Prices Last Reported

	$	Marks per metric ton
PIG IRON		
Hematite, Oberhausen	18.71	130,829
Foundry, No. 3, Oberhausen	15.41	107,765
Bessemer Stahleisen, Siegen	20.41	142,697
Foundry, No. 1, Oberhausen	15.40	107,695
Luxemburg Foundry	14.73	102,993
COKE		
Ruhr furnace	29.30	20,487
Ruhr foundry	29.06	20,321
SEMIFINISHED STEEL		
Billets	24.84	173,700
Sheet bars	29.77	208,200
Wire rods	29.07	203,300
FINISHED STEEL		
Standard rails	35.03	245,000
Merchant bars	33.61	235,000
Structural shapes	33.49	234,200
Ship plates	37.81	264,400
Medium plates, 3 to 5 millimeters	42.41	296,600
Sheets, below 3 millimeters	47.15	329,700
Tin plate	77.51	542,000
Plain wire	25.88	181,000
Bands and strips	39.34	275,100

All prices are f.o.b. furnace or mill.

French Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Hematite, Lorraine	22.05	315
Basic Bessemer, Lorraine	17.15	245
Foundry, Longwy, No. 3, sand-cast	16.45	235
Foundry, Longwy, No. 3, chill-cast	17.15	245
Ferromanganese, 76 to 80 per cent.	68.60	980
COKE		
French furnace	6.44	92
German furnace, f.o.b. frontier	6.65	95
French foundry	9.03	129
SEMIFINISHED STEEL		
Blooms	23.45	335
Billets	24.85	355
Sheet bars	26.95	385
FINISHED STEEL		
Standard rails	38.50	550
Merchant bars	31.50	450
Angles	33.25	475
Normal beams and profiles	33.25	475
Plates, ship and tank, 10 millimeters and thicker	44.10	630
Plates, bridge and tank, 5 to 10 millimeters	45.50	650
Sheets, black, 3 millimeters	48.30	690
Sheets, blue annealed, 2 millimeters	51.10	730
Shafting, cold-drawn, 40 to 60 millimeters	56.00	800
Bars, 2 per cent nickel steel	101.50	1450

All prices are f.o.b. furnace or works.

Belgian Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Basic bessemer, Belgian	16.25	250
Basic open-hearth, Belgian	16.58	255
Gray forge, Belgian	15.93	245
Foundry, No. 3, Belgian	17.55	270
Foundry, No. 3, Luxemburg	17.88	275
Foundry, No. 3, Lorraine	17.88	275
SEMIFINISHED STEEL		
Blooms	22.43	345
Billets	23.73	365
Sheet bars	24.70	380
Wire rods	33.80	520
FINISHED MATERIAL		
Standard rails	32.50	500
Merchant bars	29.25	450
Normal beams and profiles	26.33	405
Plates, 5 millimeters and thicker	30.88	475
Sheets, black, 3 millimeters	33.80	520
Sheets, galvanized, 1 millimeter	92.63	1425
Plain wire	43.23	665
Galvanized wire	59.15	910
Wire nails	37.38	575

All prices are f.o.b. furnace or works.

and bolt bars are being imported to Birmingham at £7 17s 6d ($35.52), equal to £1 15s ($7.89) below the figure quoted by the Staffordshire mills. The comparatively large railway orders placed with the Birmingham rolling stock works have not secured much business for the iron and steel works.

The heavy foundries are directly affected by the continental money slump. Staffordshire rolls in ordinary times send considerable tonnages to the continent. Letters are now being received therefrom expressing regret at inability to place business with the Staffordshire plant at this time.

The steelmakers of the north of England report increasing demand for railway, shipbuilding and constructional material. The same is true of the Clyde area where conditions are becoming more hopeful in view of the considerable shipbuilding orders as well as large contracts for railway engines and wagons and heavy electrical plants lately placed.

Firmness with an upward tendency is the dominant feature of the South Wales tin plate trade, where orders have lately been placed from South America and the eastern market. The big order lately emanating from the Standard Oil Co. of New Jersey has not, as the makers hoped, proved the forerunner of similar big business with America. But other markets are keeping up fairly well. Although the near eastern political troubles are by no means over, traders appear to be fairly reassured that no serious interruption of business in that part of the world need be feared. The usual price quoted for prompt supplies is 19s 6d ($4.39) or 19s 9d ($4.44) for deliveries of this material sometime during the early spring.

For some time an agitation has been promoted by the merchants for a recognized percentage of commission. The makers have now offered the merchants 1 per cent as a general allowance and it is hoped that this may prove a satisfactory settlement.

Galvanized sheets are developing into a big business with steady buying from Australia, South Africa and South America. Works in some cases are booked into spring, new business as a rule being on the basis of March deliveries. No difficulty whatever is met with in obtaining £17 10s ($78.92) for ordinary 24 gage corrugated and in some cases the figure quoted is £18 ($81.18).

A sharp set back in the price of spelter has had no effect upon the prices of galvanized sheets. Some of

the metal dealers regard the reaction as quite temporary and look for still higher prices. The manufacturers expect further increase in demand with a tendency toward higher prices to be quoted at some future date.

Belgian Market Still Uncertain

European Staff Special

BRUSSELS, Dec. 1.—The recent fluctuations of sterling exchange are influencing the Belgian iron and steel market. Producers are not willing to commit themselves on extended deliveries owing to constantly changing production costs: The price of fuel and other raw materials is going up, and the various labor syndicates are asking for wage increases. It may be said that the market is passing through a period of transition and no forecast can be made as to the immediate future.

Belgium must export at least 60 per cent of her entire production of iron and steel products in order to keep the industry alive. International trade, since the armistice, has been influenced to a great extent by exchange rates prevailing between the exporting and importing countries. This fact makes Belgium's situation a precarious one at the present time and no one is willing to venture an opinion as to what effect a rise or fall in the franc will have on

Franc—$0.065

the iron and steel trade, but in any event the industry cannot be placed upon a sound basis until exchanges become stabilized.

In the meantime the smaller companies are grouping their interests and talk of mergers is heard. The Laminoirs de Baume and La Crayere have formed a combine. Another group has just taken over the administration of the Laminoirs de l' Alliance of Monce au-Saint-Fiacre and the Usines Borehill.

Blast furnace operators have appealed to the government to take steps to check the steadily rising price of coal and coke. The coal mines and cokeries it appears are taking advantage of their opportunity to obtain higher prices in foreign markets and are exporting large quantities of fuel despite the shortage which exists in the home market. Belgian consumers must pay these prices to obtain their requirements, but in so doing will be greatly handicapped when it comes to meeting German competition as the latter have ample supplies of cheap coke.

The demand for pig iron is brisk. Premiums are being obtained for prompt delivery of foundry pig. Several attractive orders for bessemer quality have been received for export. England is placing orders in Belgium for large quantities of semifinished steel.

Prices are being advanced on finished steel products. Standard beams are being sold at from 390 francs ($25.30) to 400 francs ($26). Merchant bars are quoted around 450 francs ($29.20). Prices on wire products are also stiffening and the base price for nails has reached as high as 530 francs ($34.40) per metric ton. American and German competition is still keen on these products. German mills continue to undercut the Belgians on heavy plates.

German Foundry Iron Slightly Reduced

European Special Service

DUSSELDORF, Germany, Dec. 1.—Westphalian foundry irons are weak and have been reduced about 2408 marks ($0.34) per ton, while Luxemburg iron has been cut 2473 marks ($0.35). New prices today are as follows: Westphalian hematite 130,829 marks ($19.75) per ton; Westphalian No. 3 foundry 107,695 marks ($15.50); Luxemburg foundry 102,993 marks ($14.70) and 10 per cent ferrosilicon 152,478 marks ($21.80). These prices are about the same as those prevailing in France and Belgium but are lower than the British and American quotations on similar grades of pig iron.

Steel prices are unchanged owing to the fairly well sustained demand.

Mark—$0.000143

Business is generally quieter on account of the difficulty in financing purchases by inland consumers. Imports of English coal and English and Swedish pig iron continue. Semifinished and finished steel for prompt shipment is obtainable only by importing from Lorraine and Luxemburg. The export trade is lifeless as German prices are not competitive with French and Belgian quotations. Considerable foreign trade, however, is being done in machinery and finished engineering products. Coal production is growing better as a result of the agreement with the miners for a longer day. Foreign ores are weak, good Bilbao rubio being easily obtainable at 22s ($4.95) a ton c.i.f. Rotterdam. Manganese ores are scarce and best Indian manganese is quoted 13¾d (25.8 cents) per unit c.i.f. Antwerp or Rotterdam for December shipment.

German railway rates will be advanced again Dec. 1, by 150 per cent instead of 100 per cent as previously reported. Wages continue to rise, a skilled man now earning 320 marks and an unskilled man 260 marks an hour. Coal is very strong and the official government control prices will probably be advanced by another 50 to 70 per cent in December.

Canadian Pig Iron Lower; Few Sales

European Special Service

TORONTO, Ont., Dec. 12.—A further reduction of $1 a ton has been made in the price of Canadian pig iron Nov. 27, No. 1 (2.25 to 2.75 silicon) and malleable now are quoted $32.80 and No. 2, (1.75 to 2.25 silicon) $31.80, Toronto. Montreal prices remain as follows: No. 1 and malleable, $35.15; No 2, $34.15; British iron, $33 to $35 per ton, Montreal. Melters are showing little interest, and no buying for the first quarter is reported despite the fact that furnaces have opened their books. Nearly all foundries in Ontario and Quebec have supplies of British iron on hand. Canadian makers expect a general improvement in buying early in 1923.

A slight falling off is reported in sales of finished iron and steel. Steady activity in the building trades, however, is holding up demand for structural material. Producers of shapes, beams and reenforcing bars report a brisk demand for these commodities and active operations are noted at plants in Ontario and Quebec. Shapes and beams are quoted 2.40c, Toronto.

Demand for bars is weaker. Consumers and dealers are buying in a limited way, and are not placing orders for future delivery. The price is holding firm at 2.60c, Toronto. A good demand exists for plates from shipbuilders, boiler and tank makers, and good business is expected to develop from carbuilding

companies. Plates are 2.30c, Toronto.

Sheet buying is not so brisk as a month ago, but orders on spot account are good. No. 28 black sheets are quoted 2.35c, and No. 28 galvanized, 5.50c.

Nothwithstanding that the present demand for finished iron and steel is comparatively quiet it is the opinion of local mill representatives that a general improvement will be noted in the early future. Those interested in the market are looking forward to large orders for cars and rolling stock from the Canadian National railways and the Canadian Pacific railway. Some announcement regarding orders is expected from Sir Henry Thornton, who has just arrived from England to take the office of president of the National railways.

Demand for iron and steel scrap metals continues quiet. Dealers continue to offer $10 per gross ton for heavy melting steel and $6 per gross ton for turnings, for delivery at Hamilton. Car wheels are being picked up at $15 per gross ton, Toronto. Local dealers offer $17 per net ton, Toronto, for cast scrap. Stove plate and malleable scrap are being purchased at $14 and $11, respectively, per net ton, Toronto.

Coke Shortage Hampers French

European Staff Special

Office of IRON TRADE REVIEW,
224 Rue de Rivoli,

PARIS, Dec. 1.—The production of Frence furnaces and steel mills continues to increase. Prices are firm and profitable at present levels. The time is not favorable for a general adjustment upward of prices for, after its rapid descent, the French franc is again appreciating in value and export markets are therefore not so easily attainable. Moreover, domestic buyers are only just beginning to regain confidence in the market and a general rise in prices would tend to chec this buying movement. Rolling mills and foundries are working on a very small margin of profit and these departments would be somewhat justified in slightly increasing their quotations. The export demand for pig iron is quiet, but semifinished steel products are selling well. Deliveries of reparations coke during the first half of November amounted to only 186,000 tons or about 19,000 tons short of the quota and French cokeries will not commence to increase their output before the end of December. Until the supply becomes easier, the situation will remain critical, as even now blast furnaces in the East and Lorraine are being forced to bank.

It is rumored that one of the adherents of the Comptoir Siderurgique is on the verge of withdrawing from the combine. The party in question is the Societe de la Chiers which has large interests in Belgium. The trouble has arisen over an order for about 50,000 tons of rails which will soon be placed by the French railways. La Chiers is said to be dissatisfied with the tonnage which has been allotted to them by the comptoir and they believe that they can operate to better advantage if they become independent.

The demand for pig iron is satisfactory but production is handicapped by the coke shortage. Prices have an upward tendency, but furnaces do not care to commit themselves in advance in view of the uncertainty of the price of coke which is expected to rise to 97 francs ($6.80) after Dec. 31. However, sales of No. 3 foundry chill-cast pig iron have been reported at 250 francs ($17.50) per metric ton for January delivery. The price of castings also is up.

Semifinished steel prices are firm. Activities in the domestic market have slowed down somewhat but orders for export have been received from Belgium, England, Germany and Italy.

The demand for merchant bars is considerable, but the rolling mills will not commit themselves beyond January and the price of 460 francs ($32.20) has been reached. Transactions in rails and structural shapes have been affected by the possible dissolution of the comptoir but on the whole, business is satisfactory. The French railways are commencing negotiations with eastern mills in view of their rail requirements which are estimated to be in the neighborhood of 50,000 tons. It is reported, 10,000 already has been awarded to the Societe de la Chiers. The base price is said to be 500 francs ($35) per metric ton, f.o.b. mill with certain freight allowances.

The Comptoir des Toles et Larges Plats booked orders amounting to 45,000 tons during October. Prices have been adjusted as follows: plates, ship and tank, 10 millimeters and thicker, 630 francs ($44.10) per metric ton; plates, bridge, and tank, 5 to 25 millimeters, 650 francs ($45.50); sheets, black, 3 millimeters, 690 francs ($48.30); sheets, blue annealed, 2-3 millimeters, 730 francs ($51.10); close annealed sheets, 930 francs ($65.10).

Franc—$0.07.

Scrap Shows Signs of Life

(Concluded from Page 1606)

life as dealers rush out tonnage on old contracts and are answering inquiries for future delivery. Quotations still are weak and inclined downward.

Prices Show Little Change

Boston, Dec. 12.—Both prices and volume of business in iron and steel scrap show little change during the past week as compared with the week previous. Heavy melting steel is still offered at $14 to $14.50 shipping point and cast grades are all dull with no change in price. A slightly better demand is reported for chemical borings from outside New England, but dealers continue to offer $16 shipping point and to refuse to take in tonnage at higher prices. Blast furnace borings and turnings are off about 50 cents which makes the top price at shipping point $11. Several fairly large sales of railroad malleable are reported at $20, delivered.

Several Grades Lower

New York, Dec. 12.—Prices on several grades of scrap have been marked down during the past week, the reductions averaging about 50 cents a ton. Among the items affected are No. 1 heavy steel, No. 1 railroad steel, borings, turnings, stove plate, and wrought pipe. Little buying is done in any of these grades, although some heavy melting steel still is going into the Pittsburgh district.

Consumptive Demand Is Low

Pittsburgh, Dec. 12.—Consumptive demand of scrap at the present time is low. All consumers are endeavoring to reduce their stocks as much as possible and are holding up buying. Except for the support furnished the market by the high bids made on the last railroad lists awarded, lower quotations would doubtless prevail. On the list of the Pennsylvania lines east, heavy melting steel was bid in by Youngstown buyers at about $21.15. This grade still is quotable at $20 to $20.50. Apparently some dealers still are short on steel specialties since bids above $22 were successful in bringing about the award of railroad coil and leaf springs, knuckles and couplers, and steel car wheels on the Pennsylvania railroad lists.

Grades Generally Steady

Detroit, Dec. 12.—Price changes in iron and steel scrap this week are small and all grades generally are steady compared with the previous week. Dealers report trade quiet, but not inactive. There is a fair amount of material moving. Buyers are not so active at this time due to the approach of inventory season and not caring to carry large stocks on hand at the close of the year.

Some Heavy Tonnages Sold

Cleveland, Dec. 12.—Buying of scrap continues in this district, important tonnages of heavy melting steel, machine shop turnings and bundled sheets having been involved during the past week. Some of this has been disposed of in Cleveland while Mahoning valley consumers are good buyers. Most of the transactions are being put through quietly, some contracts running well through first half. Consumers also are urging shipments on old contracts, a condition dealers are finding difficult to meet because of transportation difficulties. Machine shop turnings are up 50 cents to $14.75 to $15.25 while mixed borings and turnings and shovel turnings are advanced 25 cents to $15.75 to $16.

Business Is Unusually Active

Customary Seasonal Declines in Important Measures of Trade Much Less Than in Former Years—Freight Movements Exceed 1920—Automobile Output and Building Heavy—Credit Demands Increase

BY JOHN W. HILL, FINANCIAL EDITOR

BUSINESS activities are being maintained at a rate that is wholly unprecedented for this time of the year. Nothing like the usual seasonal declines are occuring in freight movements, in iron and steel production, in building construction, in automobile output, or in demands for credit. In fact, in some of these significant measures of trade the tide still is rising.

Diminished outputs of iron and steel ordinarily come with the closing months of the year. In November, however, the daily average of pig iron production increased nearly 12 per cent over October. It was 100 per cent greater than in November, 1921 and 250 per cent above the low point of the depression in July, 1921. As shown by the Business Trend chart, pig iron production is rapidly approaching the point regarded as a normal level, based on the trend of blast furnace activity over 25 years. Ingots also gained slightly in November, the output being the highest for any month since September, 1920.

In car loadings the showing is even more striking. Although the October freight movement did not quite reach the high record of October, 1920, November car loadings have been running 10 per cent ahead of those of two years ago. The movement of merchandise and miscellaneous freight continues to top all records in history. The car shortage is dwindling and virtually all priorities and restrictive traffic regulations are being dropped. The heavy movement of freight reflects the enormous demand for goods in the country together with the expanding purchasing power of consumers.

The Business Trend chart of automobile production discloses one reason why the demand for steel is being maintained. The estimated output of 220,000 passenger cars and trucks for November is nothing short of remarkable. It is largely due to the broadening demand for closed models. The month's record exceeds 1921 by 90 per cent. It was the greatest November production in the industry's history. The year's output is now expected to reach nearly 2,500,000, against the previous high mark of 2,205,000 in 1920. All plans are being made for large production in 1923. Numerous companies are expanding their production schedules and greatly increasing requirements for steel.

Sustained production and heavy retail trade explain the continued demand for credit. Usually both rediscounts and note circulation of the federal reserve system decrease early in December. Last week rediscounts gained $25,000,000 and note circulation $31,000,000.

New building continues heavy with contracts awarded in 27 North Eastern states and reported by F. W. Dodge & Co., amounting to $248,366,000. This is only 2 per cent under October and 30 per cent greater than last October. The total for 11 months is 45 per cent greater than it was for the same period of 1921.

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Dollar Purchasing Power	May 4
112 Years of Prices	March 30

The Barometer of Business

WEEKLY COMPARISON

	Last week	Week before	One month ago	One year ago	1913
Business failures	484	363	407	587	308
Cash Ratio Fed. Res. system	74.3	76.4	76.4	73.1	....
Loan rate, 4-6 months, N. Y. (per cent)	4½-4¾	4½-4¾	4½-4¾	5-5¼	5½-5¾
Aver. 20 Ind'l. shares	$93.16	$90.79	$92.79	$76.13	$75.59
Aver. 20 Rail shares	$84.28	$84.33	$89.28	$74.26	$102.71
Aver. 40 bonds	$78.56	$78.89	$79.40	$75.58	$93.00
Car loadings (week ended Nov. 25)	955,495	969,094	1,014,480	673,465	*803,701
Bank debits 164 cities (000 omitted)	$8,615,487	$8,745,792	$8,212,945	$8,964,738	.....

*1920.

FOREIGN EXCHANGE (Demand)

	Normal	Dec. 11 (close)	Week before	Month ago	Year ago
Sterling	$4.86	$4.58	$4.53	$4.46	$4.14
Francs	19.3c	7.04c	7.02c	6.43c	7.83c
Lira	19.3c	5.00c	5.01c	4.48c	4.46c
Marks	23.8c	0.01¼c	0.01¼c	0.01¼c	0.54c

MONTHLY COMPARISON

	November	Month before	Year ago	Monthly average 1913
Dodge building awards in 27 states	$248,366,000	$252,137,000	$192,311,000	$71,450,000
Business failures:				
Number	1737	1708	1988	1336
Liabilities	$40,265,297	$34,647,438	$53,469,839	$22,723,000
Exports	†$372,000,000	$313,093,000	$343,330,815	$207,000,000
Excess of gold imports	†$3,274,561	$23,065,000	$39,530,367	*$630,716
Bureau of Labor Price Index	†154	153	142	100
Bradstreet's Price Index	147.7	144.4	128.6	100
Economist's British Price Index	4285	4264	4499	2717
Cost of Living Index	†157.1	155.6	163.7	100
New incorporations	$808,719,600	$651,577,390	$367,956,000	$172,301,000
Railroad net earnings	†$85,000,000	$58,000,000	$105,400,000	$59,900,000

†October. *Monthly average export excess.

The Business Trend

December 14, 1922

TRADE TODAY, TOLD BY IRON TRADE REVIEW CHARTS

GENERAL SITUATION—Winter production and trade promise to continue much stronger than usual; underlying economic structure strengthened by sustained rise of prices for farm products; prospects of reparations settlement improves European outlook.

INDUSTRIAL PRODUCTION—November pig iron production gains 11 per cent over October; daily rate 250 per cent over July, 1921. Ingot output highest since September, 1920.

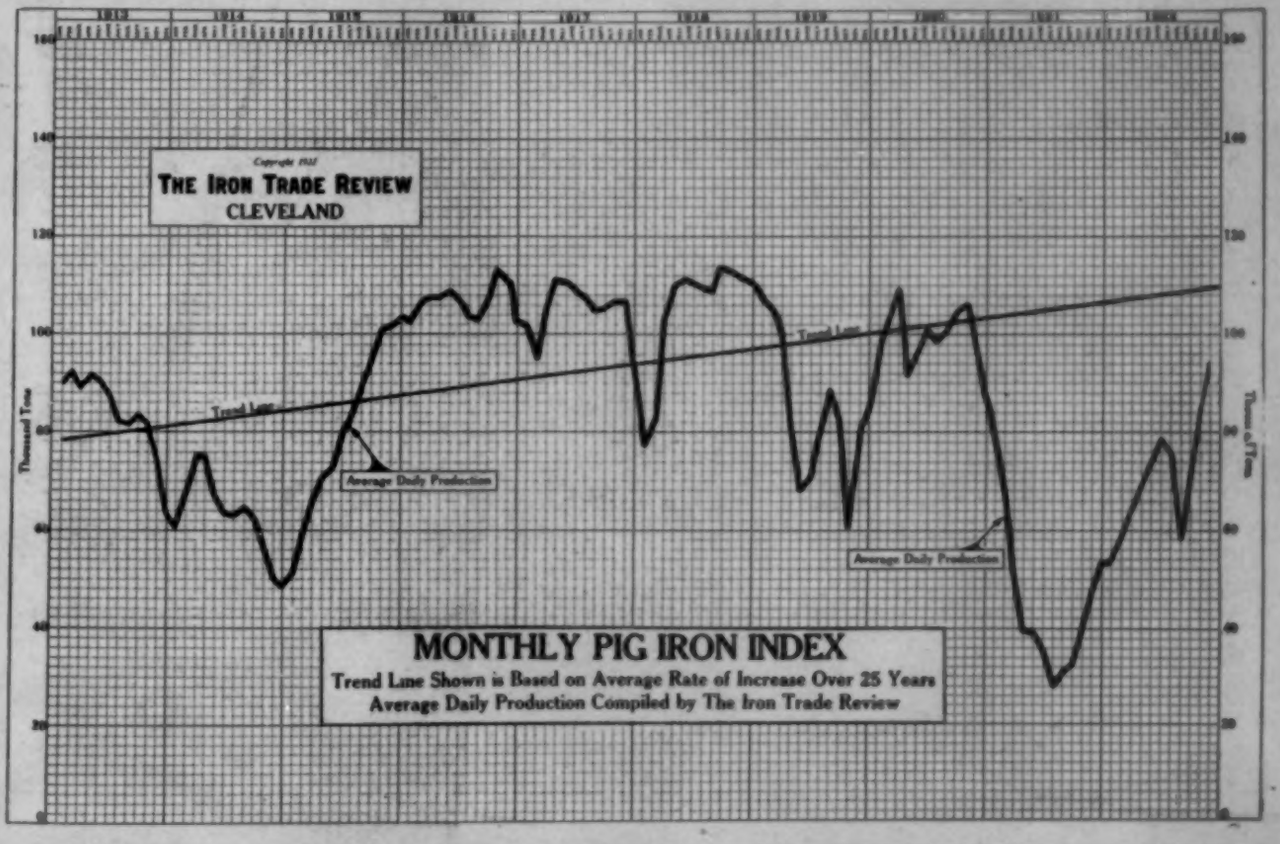
AUTOMOBILE PRODUCTION — November output estimated at 220,000 passenger cars and trucks; gain of 90 per cent over year ago; estimated total of 2,500,000 for 1922 is new record.

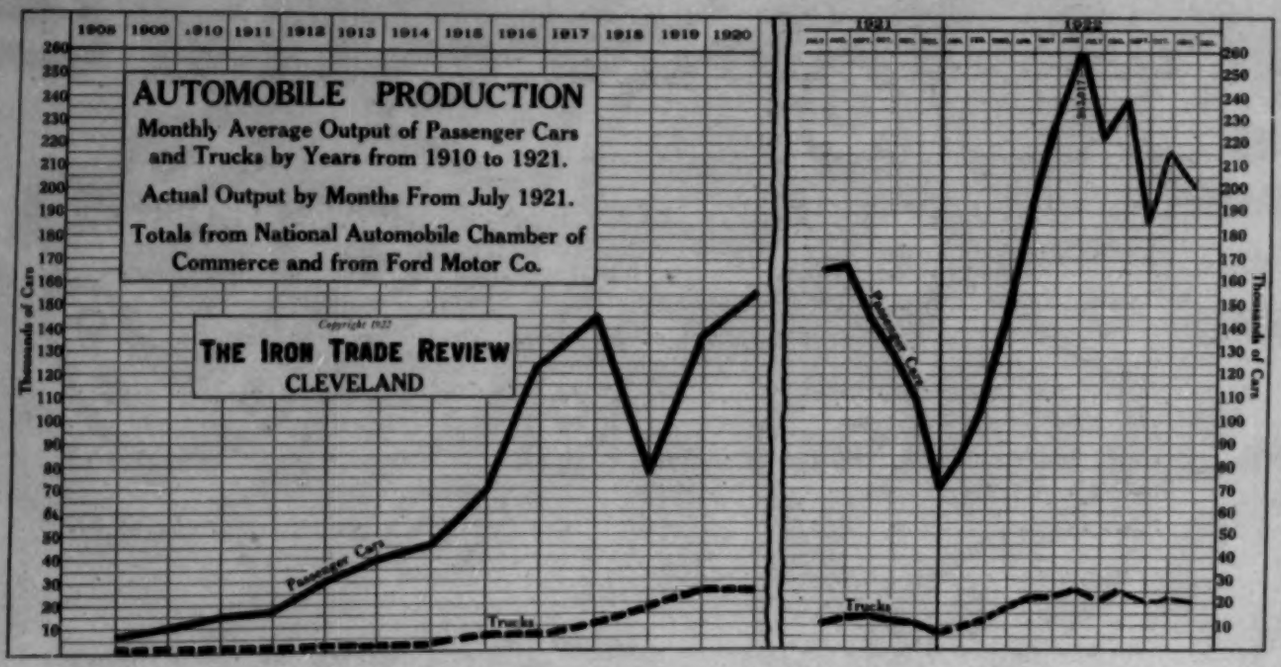
SECURITY PRICES — Better industrial earnings, increased and resumed dividends and good prospects for 1923 helping shares to rise after recent drastic slump.

COAL PRODUCTION—November production of about 45,000,000 tons near normal; year's output of 365,000,000 tons only 6 per cent less than same period of 1921; weekly output over 11,000,000 tons.

FREIGHT TRAFFIC—Volume of car loadings unprecedented for this period of year; November freight traffic 10 per cent ahead of previous November record in 1920.

FOREIGN EXCHANGES—Pound sterling now back over four-fifths of ground lost in war; now less than 7 per cent under par; other exchanges strong; better European outlook.


THE IRON TRADE REVIEW
CLEVELAND
Trend Line
Trend Line
Average Daily Production
Average Daily Production
MONTHLY PIG IRON INDEX
Trend Line Shown is Based on Average Rate of Increase Over 25 Years
Average Daily Production Compiled by The Iron Trade Review


AUTOMOBILE PRODUCTION
Monthly Average Output of Passenger Cars and Trucks by Years from 1910 to 1921.
Actual Output by Months From July 1921.
Totals from National Automobile Chamber of Commerce and from Ford Motor Co.
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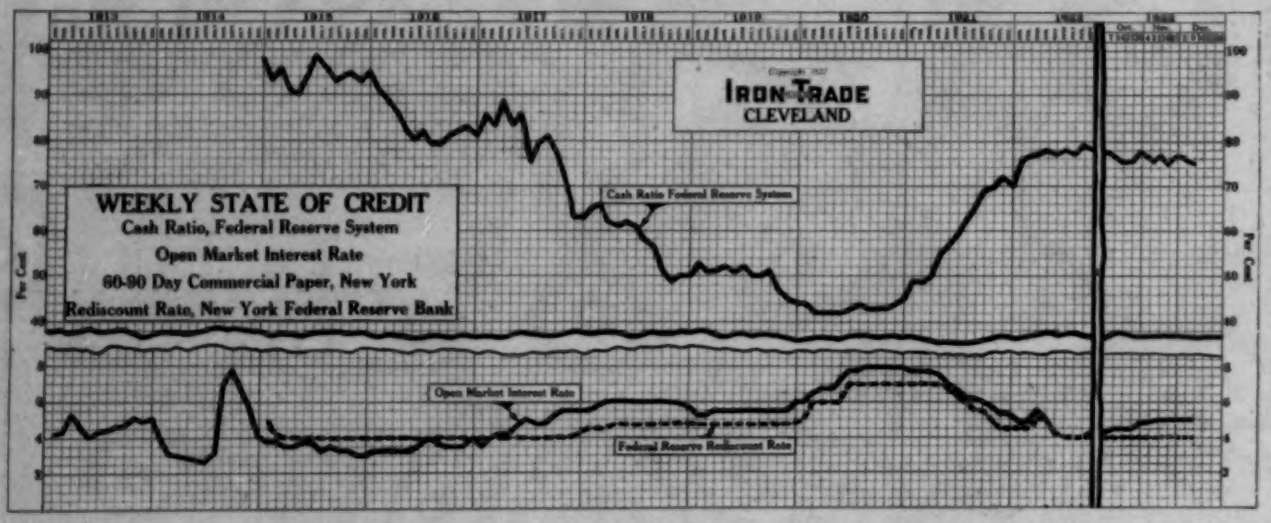
CLEVELAND
Passenger Cars
Trucks
Thousands of Cars


WEEKLY STATE OF CREDIT
Cash Ratio, Federal Reserve System
Open Market Interest Rate
60-90 Day Commercial Paper, New York
Rediscount Rate, New York Federal Reserve Bank
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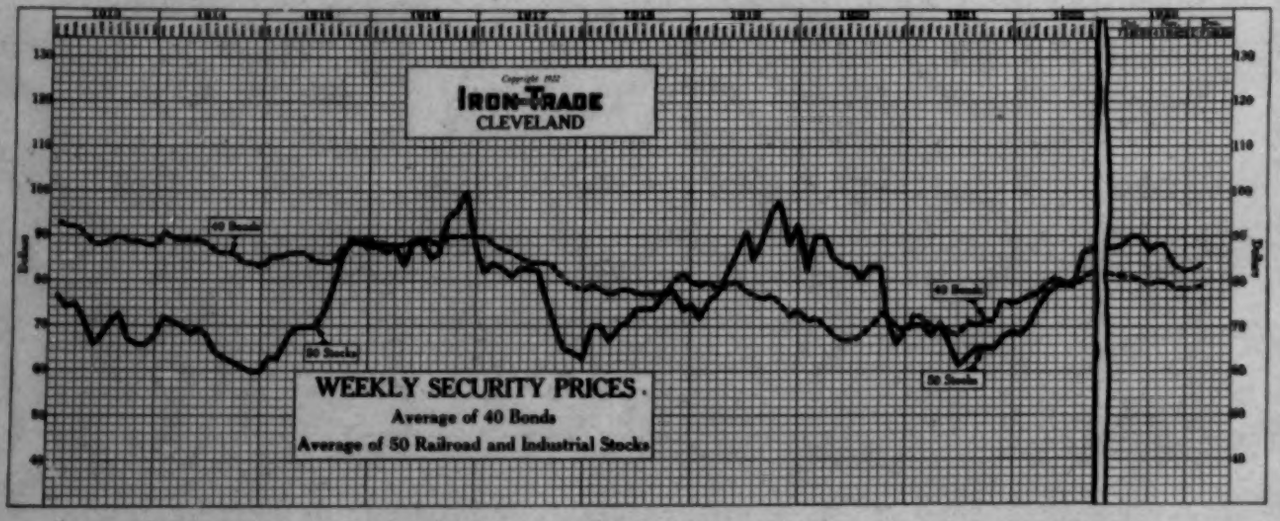
CLEVELAND
Cash Ratio Federal Reserve System
Open Market Interest Rate
Federal Reserve Rediscount Rate
Per Cent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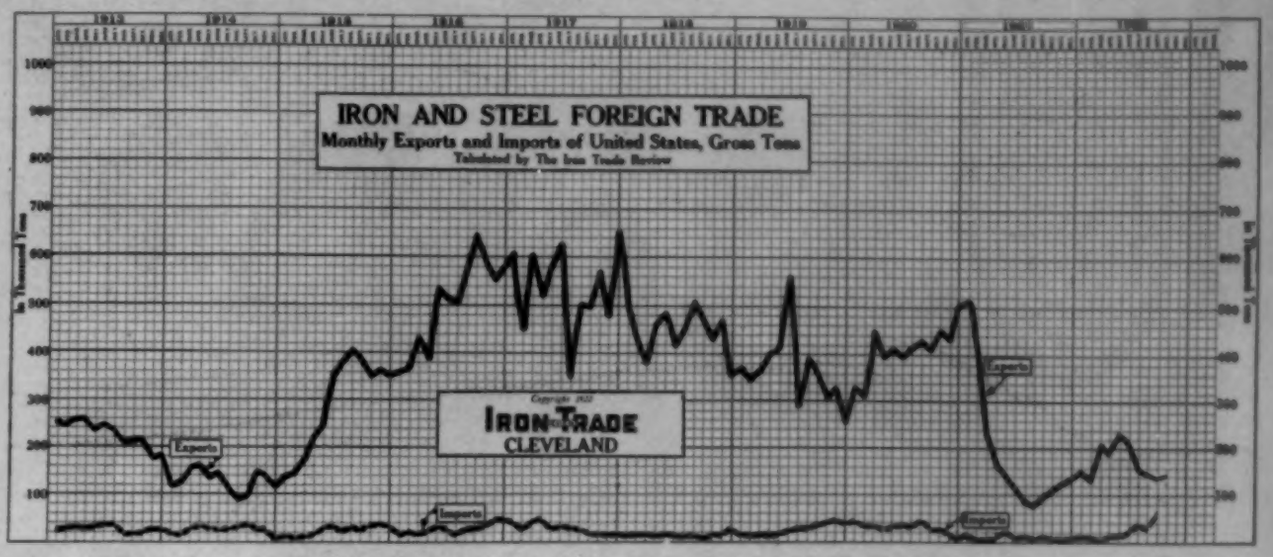
40 Bonds
50 Stocks
WEEKLY SECURITY PRICES.
Average of 40 Bonds
Average of 50 Railroad and Industrial Stocks
Dollars


IRON AND STEEL FOREIGN TRADE
Monthly Exports and Imports of United States, Gross Tons
Tabulated by The Iron Trade Review
IRON TRADE
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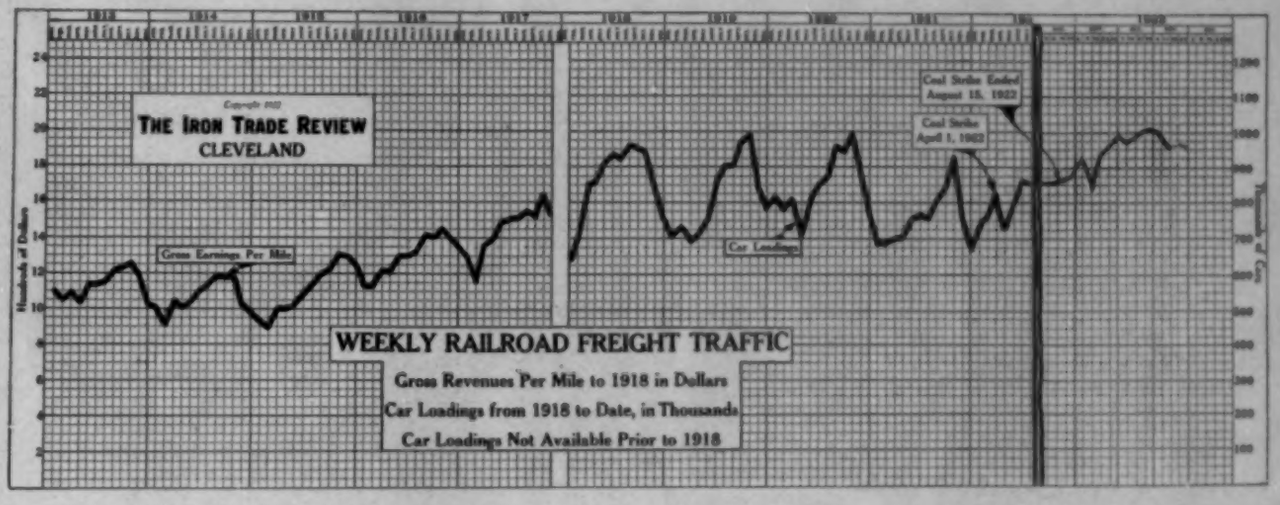
Exports
Imports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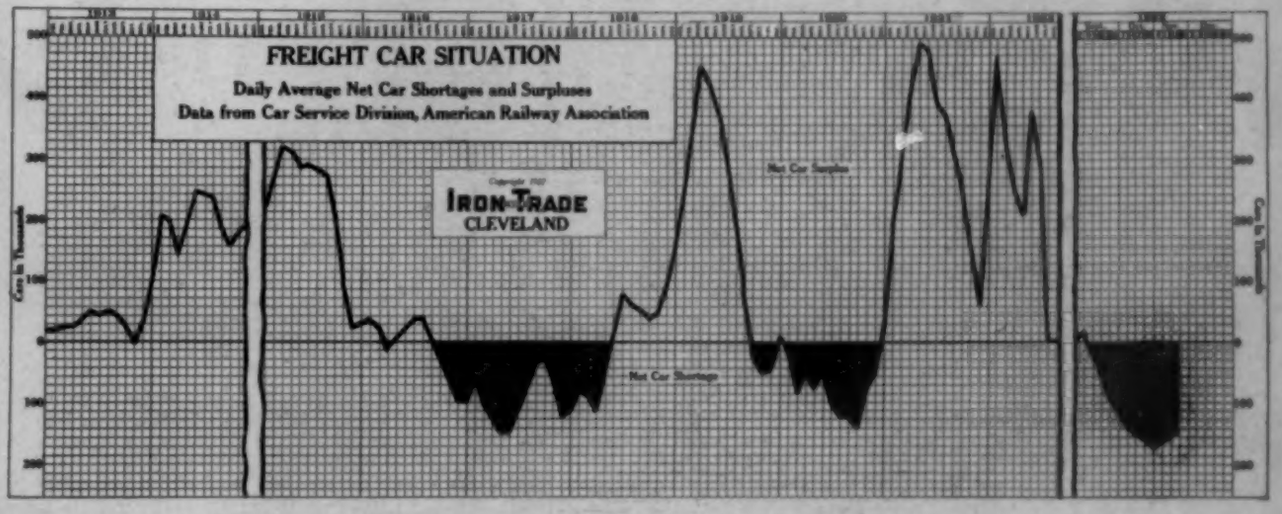
Gross Earnings Per Mile
Car Loadings
Coal Strike Ended August 15, 1922
Coal Strike April 1, 1922
WEEKLY RAILROAD FREIGHT TRAFFIC
Gross Revenues Per Mile to 1918 in Dollars
Car Loadings from 1918 to Date, in Thousands
Car Loadings Not Available Prior to 1918


FREIGHT CAR SITUATION
Daily Average Net Car Shortages and Surpluses
Data from Car Service Division, American Railway Association
IRON TRADE
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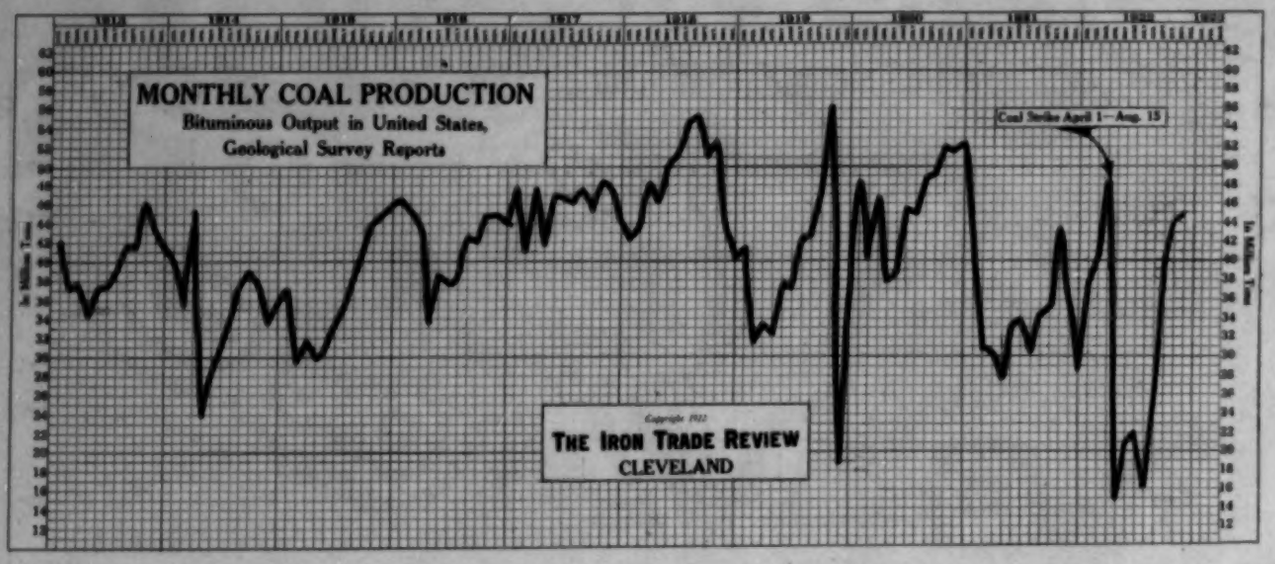
Net Car Surplus
Net Car Shortage


MONTHLY COAL PRODUCTION
Bituminous Output in United States,
Geological Survey Reports
Coal Strike April 1—Aug. 15
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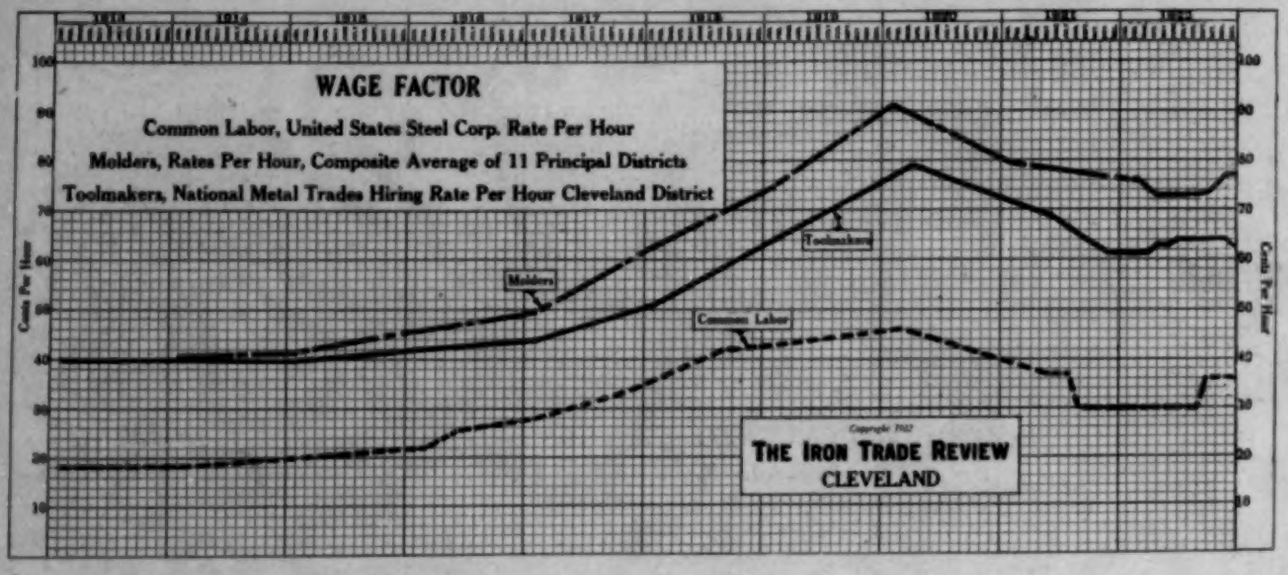
WAGE FACTOR
Common Labor, United States Steel Corp. Rate Per Hour
Molders, Rates Per Hour, Composite Average of 11 Principal Districts
Toolmakers, National Metal Trades Hiring Rate Per Hour Cleveland District
Toolmakers
Molders
Common Labor
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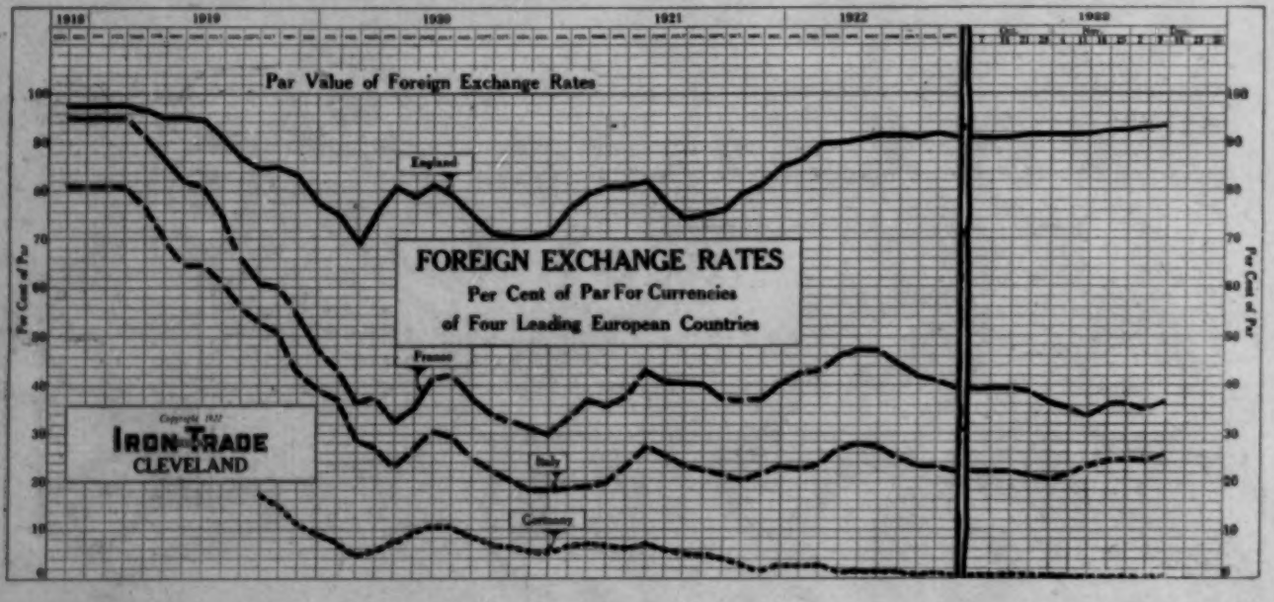
1918
1919
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Par Value of Foreign Exchange Rates
England
France
Italy
Germany
FOREIGN EXCHANGE RATES
Per Cent of Par For Currencies
of Four Leading European Countries
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Organizing Plant Maintenance

Considerable Saving in Plant Upkeep May Be Effected through the Functions of a Carefully Selected Staff—Duties of Personnel Must Be Clearly Defined and Co-ordinated—Typical Organization Is Given as Example

BY M. W. DUNDORE

PRESENT economic conditions of the steel business as applied to modern plant practice invite a close scrutiny of the means employed in the administration of an efficient maintenance organization. Does your maintenance department reflect credit on the works management as affecting repairs and preventive maintenance?

Industrial organizations rapidly are becoming aware of the fact that a well administered maintenance department is an indispensable adjunct in its relation with the unmitigated flow of production. The tendency during the past few years has been that keenly alert industrial executives are wont to recognize the fact that preventive maintenance is of far greater importance as an insurance of continued productive results than is the old fashioned executive's self-administered repair gang which always was just a little behind in the making of repairs.

Organizations also are appreciating the fact that the hoary method of hand picking a maintenance crew with its inevitable leader of personnel by appointing the oldest mechanic as master mechanic in recognition and appreciation of his length of service with the company is no longer justifiable nor can it be hailed as an economic procedure. This practice has become obsolete due to the fact that present day maintenance calls for expert technical and practical preventive knowledge, rather than the ability to make hasty and haphazard repairs to equipment after breakdown. This method resulted in the slowing up of production and demoralization of the morale of both the foremen and the workmen.

In other words, executives are becoming aware of the fact that a smoothly running and continually operating plant is not accidental, also, that preventive maintenance is based on a definite and predetermined policy which includes,

1. Installation and performance.
2. Maintenance expense and economics.
3. Supervision and standards.

In order that this policy be adhered to, it must necessarily follow that for the maintenance organization to function properly;

1. The responsibility be fixed definitely.
2. Specialization of maintenance functions be recognized clearly.
3. Adequate equipment be provided.

Maintenance Engineer in Charge

Any properly organized and functioning maintenance organization will of necessity have as its leader an industrial or maintenance engineer who should be capable of developing this department along economic lines as will prove itself through sheer merit of performance, to be measured at the end of the fiscal year by whether or not the balance of creditable performance shall be entered in the credit column as affecting productive results. A maintenance engineer's capability should be based on the relative merits of his ability, since his responsibilities as outlined in Fig. 1 cover a vast field of directed effort, the effects of which will be felt throughout the entire plant structure. Judgment of the maintenance engineer should be based on:

Ability to win confidence and respect because of his personality or through sheer merit, or both.

Originality in devising new and better methods; willingness to learn and use improved methods.

Fairness in dealing with other members of the organization and ability to win their co-operation.

Ability to win the loyalty of the men in his organization.

Ability to plan work intelligently; to delegate authority wisely and get results.

Ability to make his organization efficient as a part of the whole organization; to understand the problems of other departments.

Ability to rouse the interest in his own men, and success in developing their own abilities.

Is his moral, mental and physical make-up such that he can devote unlimited energy to his duties?

Appraising the Organization

A maintenance engineer when authorized to institute a department of his own will of necessity plan some such organization as outlined later in this article, its flexibility arranged to suit scope and nature of work to be handled and governed only by the size and character of the plant. One of his first duties will be to make an appraisal of the existing organization if any:

A. Departments:

1. How is the organization divided?
2. Into what departments?
3. What is the nature of work done in each?
4. What is the number of men employed in each?

B. Costs:

1. What real use is made of repair cost statistics? By whom?
2. What records are kept? By whom?
3. What basis is used for apportioning burden to individual departments?

C. Workmen:

1. Is the organization union or non-union?
2. Has the department had any past labor trouble?
3. Causes, and how settled?
4. Length of service of individual workmen?
5. Are they specialists or semi-skilled in several trades?
6. How divided?

D. Wages:

1. Are employes paid by the hour? How much?
Day rate? How much?
Contract? How much?
2. Are foremen paid by the hour? How much?
Monthly? How much?
Bonus? How determined?

E. Efficiency:

Are they working

1. In a leisurely way?
2. At a low efficiency?
3. At fair efficiency?
4. At high efficiency?
5. Holding back?

F. Planning:

1. Is there a progress board?
2. What is the nature of the preparation covering the next job?
3. Is material arranged for in advance of requirements?
4. Who does the planning—individual foremen or maintenance engineer?
5. What records are used?

G. Co-operation:

1. Do different foremen co-operate?
2. Are they capable of supervising?

H. Anticipation:

1. Are breakdowns and repairs anticipated?
2. Are stock and repair parts on hand, Low? Fair? High?

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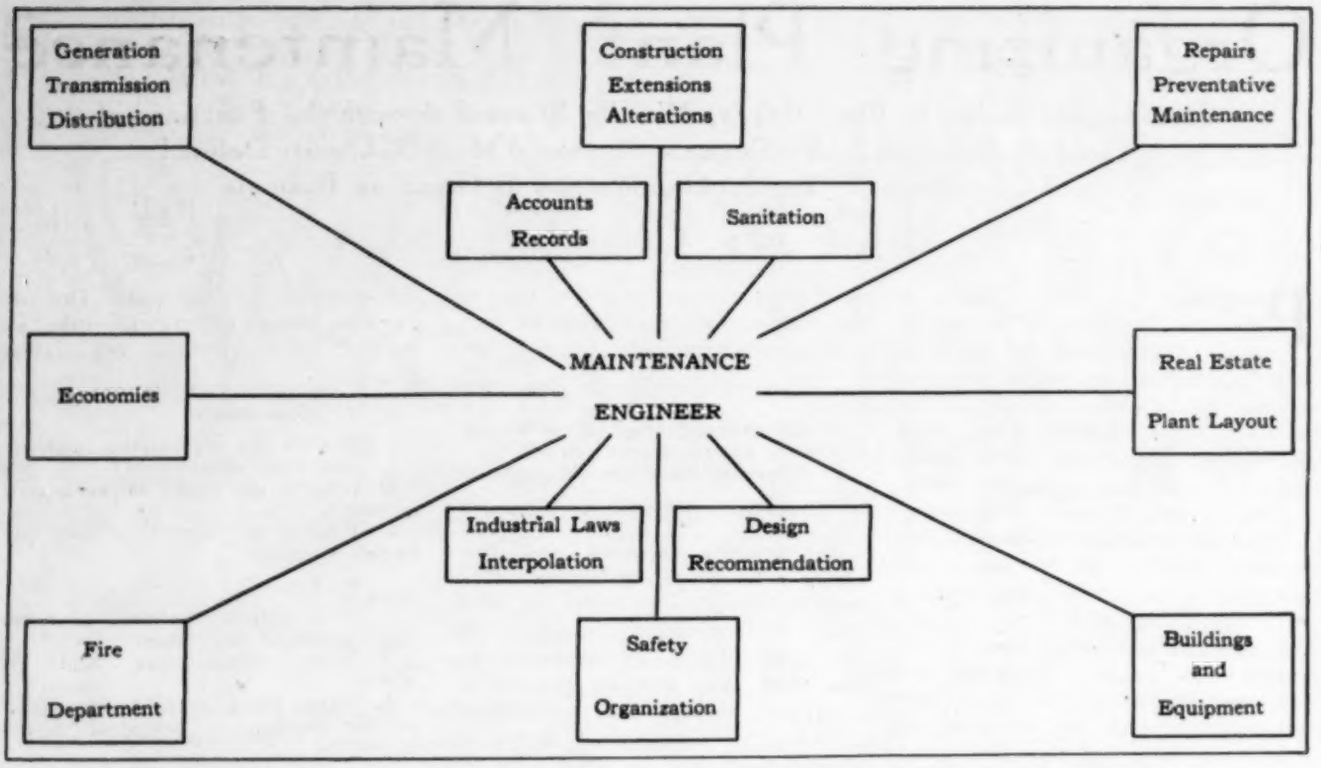

FIG. 1—THIS DIAGRAM SHOWS THE BROAD FIELD OVER WHICH THE MAINTENANCE ENGINEER ASSUMES DIRECTION

3. What system of inspection is used?

After the maintenance engineer has made his appraisal of the employes who will or can be utilized as a nucleus in the formation of the revised organization, he may take steps to appraise the plant proper along the following or similar lines:

A. Buildings:

1. Is the plant well laid out?
2. Nature of building construction?
3. Are buildings old or new?

B. General conditions:

1. Lighting?
2. Heating?
3. Ventilation?
4. Generation and transmission of pneumatic power?
5. Generation and transmission of electrical energy?
6. Generation of steam, transmission of oil, gas, water, etc.?
7. Trucking and conveying?
8. Cranes and hoists?
9. Storage and piling of material?
10. Sanitation?
11. Belting and miscellaneous equipment?

C. Equipment:

1. In what condition is Power Plant equipment?
2. Is intelligent supervision exercised over all motors and accessory equipment?
3. Is there a systematic inspection of all equipment? By whom?
4. What records are kept?

After these preliminary appraisals have been disposed of and a thorough analysis made with its subsequent conclusions, the maintenance engineer will be in a position to revise intelligently the present organization along such lines as are best fitted to the scope of work contemplated or at hand. Otherwise, he is free to institute an organization which will embody some such features as outlined in Fig. 2. This is a simple chart of the requirements as demanded by the average industrial organization in vogue today and can be made applicable to any size plant or organization either by adding to or detracting from.

The chart emphasizes all the classes of help that pertain to well organized maintenance work and come within the direct supervision of the maintenance engineer.

As a practical example of such an organization the writer will use the maintenance organization, which has been reorganized under his supervision and which has operated successfully and functioned under all kinds of variable conditions. It has proved its economic value time and again in making possible an increase in production without the necessity of developing or installing extra or emergency equipment. This foundry which is distributed over nine acres of rolling terrain and has a monthly production of 1200 tons of miscellaneous steel castings, is equipped with such a variation of equipment as will test the stamina and morale of any well organized maintenance organization.

This equipment includes two 20-ton acid open-hearth furnaces; one 61-inch cupola; two 2-ton converters; 17 cranes consisting of one 20-ton, eight 10-ton, two 7½-ton, two 5-ton, two 3½-ton, one 2-ton and one charging machine; 13 monorail hoists electrically operated, ranging in capacity from ½ to 3 tons; three air compressors with a total capacity of 3200 cubic feet per minute; four 6-foot and one 8-foot sand mills; and 219 motors ranging in size from 1/6 to 300-horsepower and having a total connected load of 3715-horsepower.

This list is augmented by 480 additional pieces of foundry and machine shop equipment which includes a 12-ton annealing furnace, four sand blast machines and rooms, six car-type drying ovens, one rack oven, six tumbling barrels; besides a fully equipped pattern shop, heat-treating department and power, switchboard and generating plant.

This varied list of equipment is kept in nearly constant service 24 hours per day and has never failed to be at the command of the production organization for any length of time. The maintenance organization as in force today is as outlined in Fig. 3. The present active organization of 15 skilled mechanics compared with the old non-organized efforts of 34 operatives without corrective supervision unable to or unwilling to apply preventive maintenance and proven without doubt the economic wisdom of intensive appli-

cation of well and efficiently directed energy.

The possibility of such a reduction in force was due to: 1. Elimination of noninterested workmen; 2. retention and instruction of remaining operatives in all important phases of maintenance work; 3. utilization of shop force on week-end and shut-down periods; 4. issuance of instructions to each employe of the department covering the particular functions for which he is held responsible; 5. developing foremen capable of corrective supervision over such a large and varied scope of work; 6. bestowing credit when and where due.

Maintenance Costs Are Reduced

On week-ends, holidays, and shut-down periods, the maintenance engineer is given the privilege of requisitioning carpenters from the pattern shop, bricklayers and helpers from the furnace and ladle crews, laborers from the molding floors, repairmen and helpers from the crane operators, which all in all creates a tremendous saving in money besides increasing the morale of workmen steadily employed. The savings wrought by such a system as installed has proven its efficiency and economic value as can be determined readily by referring to Fig. 4 which shows the comparison of money expended on maintenance work since the installation of the revised organization. This material saving was not effected by the reduction of labor alone but also in the materials purchased and used.

The scope of work as covered by the maintenance organization may best be summed up as follows: Plant maintenance and extensions; plant protection; plant cleaning; safety first; fire protection and organization; real estate; tenant houses; additions and alterations; generation and distribution of heat, light and power; mechanical and electrical transmission lines; water, oil, air and gas transmission lines and storage steam transmission lines; refrigeration system; sprinkler system; fire lines; cooling and spraying system; plumbing; watchmen's clocks, apparatus and lines; meters and gages; plant telephone and call system; fire alarm system; safety-first devices; garages and office buildings; lighting and wiring; cranes and runways; machinery; drainage system; railway sidings; exhaust and ventilator system; belting and shafting; fences; pneumatic and hydraulic machinery; company streets; truck runs and paving; sewerage system; powerhouse equipment; furnaces; trucks and industrial sidings and railways; shop mules; storage facilities; warehouses; conveyors and loaders; tunnels; ovens, reproducers; stacks; ladles; shipping and unloading facilities; boilers and heating apparatus in general.

From the above scope of work it is derived that the duties of the personnel comprising the organization should be distributed as follows:

1. *Maintenance Engineer.* To be head of the maintenance department reporting directly to the chief of staff or works manager.

To have charge of plant maintenance and extensions; generation and transmission of heat, light, and power; plant protection; plant cleaning and sanitation; safety first organization; fire department organization.

To act as chairman of the safety first committee.

To have charge of safety first.

To act in an advisory capacity to the fire department organization.

(a). Plant Maintenance and Extensions. Through the master mechanic, chief electrician, machine shop foreman and foreman erectors to

Design, estimate on or install new buildings, or additions and alterations to same.

Maintain all plant buildings, extensions and apparatus contained therein.

Design, estimate on or install new equipment or apparatus and make alterations in or additions thereto.

(b). Generation and Transmission of Heat, Light and Power. Through the power house engineer, chief electrician and machine shop foreman to

Operate the power plant and all apparatus connected therewith for the generation and transforming of power and light.

Operate the boilers and all auxiliary apparatus for the generation of heat.

Maintain all transmission lines throughout the plant.

(c). Plant Protection. Through watchmen, safety inspector and fire chief to furnish protection from fire, theft and other losses.

Maintain proper discipline for the

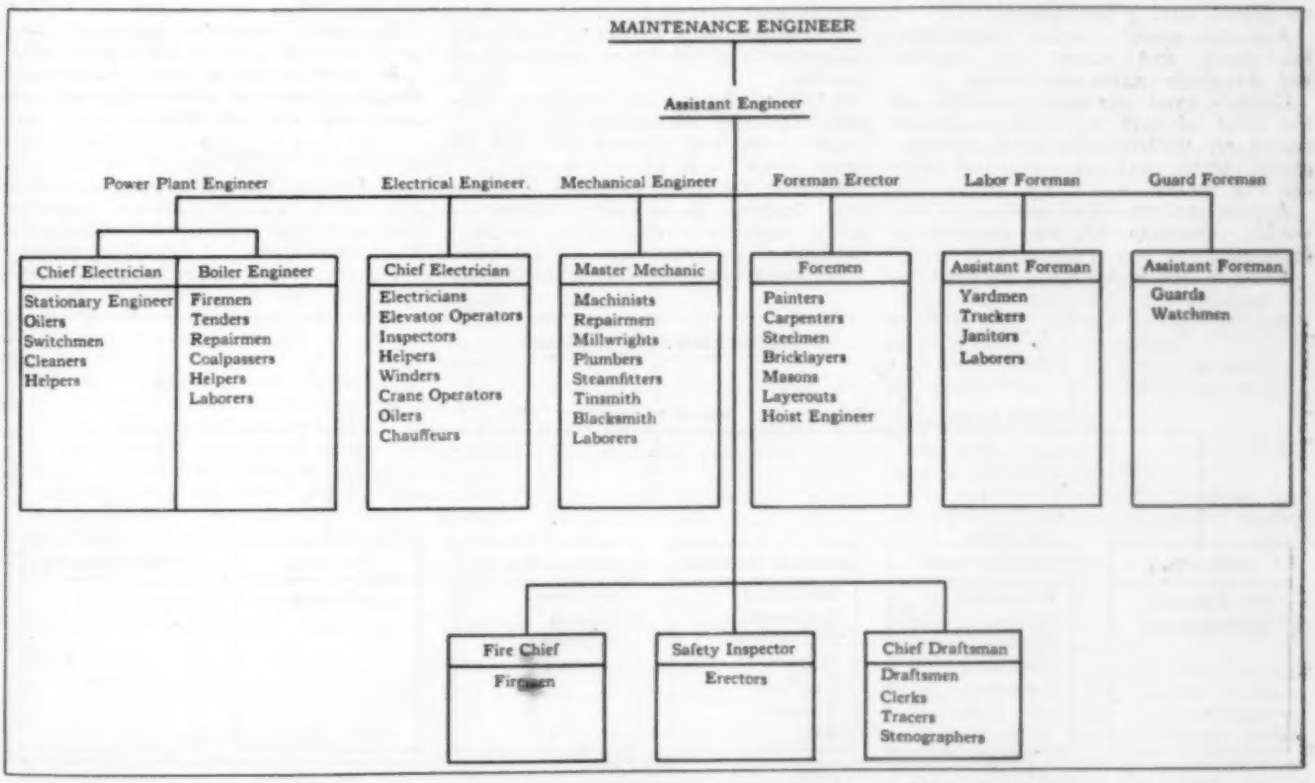

FIG. 2—A TYPICAL MAINTENANCE ORGANIZATION REQUIRED BY THE AVERAGE INDUSTRIAL PLANT TODAY

protection of property and lives of employes.

(d). Plant Cleaning. Through foremen of departments and foreman of labor to keep all yards and buildings clean.

Keep all departments clean.

(e). Safety First. Through the safety inspector to maintain a safety first organization.

Maintain record of weekly equipment safety inspection records.

(f). Fire Department organization. Through the fire chief to maintain a fire fighting organization composed of men in the various departments.

Have charge of and be responsible for all fire fighting apparatus and equipment.

(g). Executive. Through the assistant engineer and stenographers to direct all activities of the maintenance department.

Keep records, allocation of machinery and equipment.

Number and names of those employed in the various departments of the organization.

Keep inventory of material ordered, used, and on hand.

Keep chart of work performed, under way, or contemplated.

Draw up and file all location plans of apparatus and equipment calling for maintenance and inspection by this department.

Submit monthly power and light consumption totals of the various departments of the plant to the accounting department.

Compile and forward monthly brick, oil, air and gas consumption totals of the various departments to the accounting department.

Compile inventory of machinery and equipment, scrapped, obsolete, or otherwise disposed of during the month.

Compile and forward to the accounting department list of work orders completed during the month.

Approve weekly crane inspection, fire-hazard, and safety first reports and designate items for action.

Compile and forward monthly to the chief of staff or works manager report on maintenance work contemplated, under way, or completed during the month.

Act as chairman and advisor at the weekly meetings of the department foremen.

Keep in touch with the various departmental foremen of the plant relative to equipment requirements, change of location or design of equipment already installed, and other miscellaneous problems arising from time to time affecting relation between equipment and production.

(h). Activities and Economies. Keep force report of organization as low as is consistent with good management, able at all times to take proper care of unexpected breakdowns, peak load in repairs and timely application of preventive maintenance.

Keep force actively engaged at all times during working hours.

Aid the chief of staff and works manager with constructive criticism.

Effect savings wherever possible through the design of labor saving devices.

Instruct the various foremen of the departments of the plant in the economical use of heat, light and power.

Instruct men in own department with the aid of timely talks and lectures pertaining to repairs and preventive maintenance.

Carry through and determine costs on air, light, oil, gas and steam, using such forms as best suited to conditions, similar to those described later in this article. This data can be made to serve as a most useful check upon actual operating conditions.

Determine ways and means of practicing economy in the transmission and use of the above mentioned elements.

Speed up cranes and hoists through economical and practical changes to gearing.

Know when and where to salvage materials at a profit.

Determine the savings in industrial insurance through proper and timely installation of safety devices.

Determine savings in fire insurance through properly organized fire protection and inspection.

Utilize available materials and scrap whenever and wherever possible and practical.

Avoid machinery and equipment idleness through the nonanticipation of breakdowns, and through the lack of repair parts on hand, or on order.

Employ employes semiskilled in several trades, encouraging others to make themselves adept in all matters pertaining to preventive maintenance.

Maintain complete file of machinery records, motor and accesory data, inspection and repair records.

Scope of Personnel

Responsibility for departmental work and the successful accomplishment of the same should be fixed and maintained along lines outlined as follows:

2. *Master Mechanic*

Has direct charge of millwrights, machinists, pipefitters, carpenters and tinsmiths.

He shall maintain all existing machinery.

He shall supervise additions or alterations thereto.

He shall supervise the installation of new equipment, machinery, etc., and resetting of present equipment.

He shall supervise the repairing of all belting, conveyors, etc.

He shall maintain belt, machine and crane repair records, the latter as affecting mechanical repairs and construction.

He shall be held responsible for the anticipation of mechanical breakdowns and repairs to equipment.

He shall, in conjunction with the chief electrician, keep all cranes in repair.

He shall direct the cleaning and oiling of all machinery and plant equipment.

He shall be responsible for the correct functioning of all exhaust and ventilating systems.

He shall co-operate with the chief electrician in all matters pertaining to the correct maintenance of plant equipment and machinery.

He shall see that all mechanically operated equipment conforms to all insurance and casualty laws.

He shall see that the proper safety devices are placed on all machines upon installation or erection.

He shall supervise the repair and installation of power plant equipment.

He shall assist all other foremen in the completion of plant equipment installations and alterations.

3. *Chief Electrician.*

Has direct charge of armature winders, electricians, elevator operators, helpers, crane operators and electric truck chauffeurs.

He shall have charge of all electrical

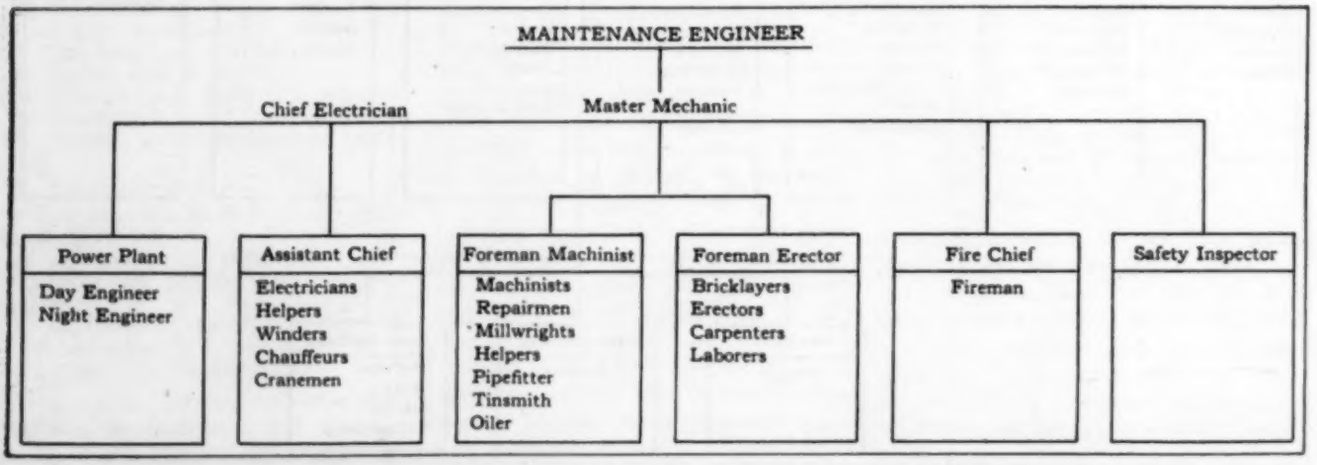

FIG. 3—THIS MAINTENANCE ORGANIZATION SUPPLIES THE NEEDS OF A LARGE STEEL FOUNDRY

transmission lines from the transformers to all parts of the plant.

He shall have supervision over the departmental help in the care of motors and lighting fixtures.

He shall have supervision of all lines up to and including the starting boxes, motors, panel boxes of the lighting system and lights.

He shall maintain all electrical apparatus on the switchboard in the power house, leaving the operation to the engineer in charge.

He shall operate and maintain all transformers in the plant.

He shall have charge of the operation and maintenance of all electrical apparatus in the plant such as recording systems, time clocks, call systems, elevator motors, etc.

He shall inspect all machinery and electrical equipment used for generative and motive power.

He shall inspect all the parts of elevator machinery, electric hoists, cranes and maintain same.

He shall supervise and inspect all electric trucks, conveyors, etc.

He shall see that all batteries and charging panels throughout the plant are inspected daily and maintained.

He shall forward to the maintenance engineer copies of inspection forms certifying to these inspections.

He shall supervise all new construction affecting the installation of motors, equipment, transmission lines, etc.

He shall maintain a complete motor installation and repair record.

He shall see that all electrical transmission lines, electrical machinery, etc., conform to all insurance and casualty laws.

He shall co-operate with foremen of all departments relative to the completion of all shop orders.

4. *Foreman Machinist.*

The foreman machinist will report direct to the master mechanic.

He will supervise the work of the machine repairmen, machinists, toolmen, tinsmith and pipefitter.

He shall be in direct charge of repairs to all power plant equipment, machine tools, cranes, foundry and machine shop equipment.

He shall inspect personally the mechanical equipment of all cranes and other mobile equipment.

He shall inspect personally and be responsible for all crane and hoist cables and the replacement of same when necessary.

He shall inspect all platform and floor scales, testing machinery, etc., calibrating this equipment monthly.

He shall render reports of these inspections to the maintenance engineer for approval and suggested action.

He shall install new machine tools, power plant machinery and miscellaneous equipment.

He shall assist all other foremen of the department in completing plant equipment installations and repairs.

5 *Pipefitter.*

He shall supervise all steam and pipefitters.

He shall maintain all fittings, valves and piping in the plant.

He shall maintain all steam, air, gas and oil piping in the power house and plant.

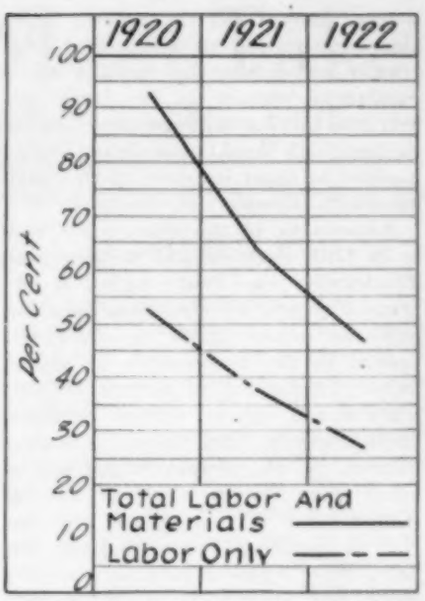

FIG. 4—SAVINGS MADE IN MAINTENANCE WORK AFTER A REORGANIZATION OF THE SYSTEM

He shall supervise the erection of all piping and storage tanks.

He shall maintain all steam and air distributing lines and returns in the various buildings.

He shall maintain all water distributing lines and returns including cooling systems.

He shall inspect and maintain all oil storage tanks, lines and pumps.

He shall inspect and maintain all drain sumps, cesspools, cisterns, drain pipes, sanitary pipes, fire lines, wash room equipment, storm sewers and lavatories.

He shall maintain all furnace and oven burners, heating systems, etc.

He shall assist all other departments in completing plant equipment installations and alterations.

He shall conform to all health and state ordinances and laws affecting his department.

6. *Tinsmith Foreman.*

He shall supervise all tinsmith and sheet metal workers.

He shall inspect and maintain all roofs of plant buildings, offices, and tenant houses.

He shall supervise the erection and maintenance of all spouting, gutters, cornices, flues, etc.

He shall inspect and maintain all steel sash, lights, etc.

He shall inspect and maintain all exhaust, blower and ventilator systems.

He shall maintain all mixing tanks, rubbish containers, drip pans, pails, waste cans, etc.

He shall fabricate, inspect and maintain all machinery and belt guards.

He shall inspect and maintain all sandblast equipment, helmets, hoods, etc.

He shall inspect and maintain all stacks, hoods, mixers, sheet steel buildings, etc.

He shall inspect and maintain all property fencing, gates, etc.

He shall assist all other departments in completing plant equipment installations and alterations.

7. *Bricklayer Foreman.*

He shall supervise all bricklayers, plasterers, helpers, masons, etc.

He shall supervise the erection of and repairs to all furnaces and ovens.

He shall inspect and maintain all brick doors, arches, jambs, checkers, slag pockets, chimneys and linings, fire-chambers, etc.

He shall supervise the repairs to ladles, spouts, walls, etc.

He shall erect and maintain all retaining walls, buildings, foundations, chimneys, curbing, gutters, sewers, manholes, etc.

He shall assist all other departments in the completion of all plant equipment installations and alterations.

8. *Foreman Erector.*

He shall have charge of blacksmith, steelmen, helpers, painters, riggers, etc.

He shall supervise the fabrication, erection, and installation of extensions of existing buildings, repairs to buildings, additions or changes to equipment, painting, etc.

He shall maintain and inspect all crane runways, oven tracks, steel doors, crane girders, bridge trolley tracks, jib cranes, etc.

He shall maintain all loading and unloading facilities, trucks, industrial tracks, sidings, locomotives, bridges, trestles, platforms, etc.

He shall check and supervise all work done by contractors on buildings, building extensions, etc., upon completion and before release of the same.

He shall see that this work conforms to all insurance and industrial laws.

He shall assist all other department foremen in the completion of all shop orders.

9. *Carpenter Foreman.*

He shall supervise carpenters, helpers, etc.

He shall inspect and maintain all flooring, partitions, bins, walks, fencing, wood buildings, etc.

He shall inspect and maintain all wood sash, trusses, skids, platforms, approaches, etc.

He shall supervise the forming for all concrete work.

He shall inspect and maintain all furniture and office equipment.

He shall supervise the erection of screens and screen doors, awnings, storm doors and windows.

He shall assist all other foremen in the completion of all shop orders.

10. *Labor Foreman.*

He shall have charge of all yard laborers, porters, truckers, etc.

He shall supervise the loading and unloading of all raw materials, bricks, scrap, sand, etc.

He shall inspect all trestles, approaches, elevated walks, platforms, etc.

He shall supervise the issuing of raw materials, coal, etc.

He shall inspect all yard equipment, toolhouses and storage sheds.

He shall supervise the policing of all plant yards, parks, sidings, lawns, beds, terraces, etc.

He shall furnish the labor neces-

sary to clean all lights, windows, roofs, etc.

He shall be responsible for the stocking of all boiler houses, cellars, oven pits, etc., with the necessary fuels.

He shall be responsible for the correct storage of all fuels and combustible materials.

He shall keep all manholes, cesspools, drain sumps, oil tanks, and plant sewerage system clean.

He shall supervise the correct placing of cars, raw materials, etc., reporting receipt of cars and materials to the receiving department.

He shall assist all other departments in the completion of all plant requisitions, installations and alterations.

Additional duties alloted to the maintenance engineer which are of importance to the conduct of the plant are:

Supervision over the fire department and instruction of men in their respective duties.

Train the fire fighting organization of the works and conduct periodic drills.

Be conversant with the local fire, sanitation and building ordinances.

Be conversant with the insurance laws relating to fire protection and casualty laws relating to safety first and accident prevention.

Keep on file all records of the safety first committee and fire inspection reports.

Receive and put into effect all urgent recommendations of the casualty and fire hazard inspectors.

Collect all data from the various foremen of the organization usable in the compilation of the weekly and monthly progress sheets, to be forwarded to the chief of staff and works manager.

This allocation of the functional duties of the respective members of the maintenance organization should be framed and posted in conspicuous places in the department where it is readily accessible and forms a continual reminder to those interested in making the department an efficient and highly creditable part of the whole plant organization, thus reflecting credit upon the works management as effecting repairs and preventive maintenance.

Employ New Steelmaking Process in England

A new steelmaking process has been put into operation recently at the works of Edgar Allen & Co., Ltd., Sheffield, Eng., and, it is claimed, offers interesting developments in electric steel melting in the future. One 10-ton and 3½-ton electric steel melting furnaces built by the Stobie Steel Co., Dunston-on-Tyne, have been installed and are being operated together as a single unit under a patent duplex electric process. By this means, scrap steel is melted electrically and refined by oxidation in a continuous manner in the large primary furnace, a third or more of the molten bath being transferred down a shoot at short intervals to the small secondary furnace for finishing.

Advantages of the process are said to be both electrical and metallurgical. Electrically, the load factor is increased greatly by continuous working and the power factor is much improved by the maintenance of molten baths. Fluctuations of current are less marked and are of shorter duration. Metallurgically, the main advantage claimed in the frequent supplying of small quantities of steel, of varying compositions if required, is the low cost of operating a plant of large output. For ingot casting or foundry work, this practice is of considerable interest. Additional advantages of the new process over an installation of several furnaces working independently include the use of less space; reduced crane service; considerably reduced repairs to furnace linings for a given output of steel; and the freer choice of scrap for melting.

Blasts with Liquid Air in British Mine

Attention has been called lately to the possibilities of liquid air as a substitute for other explosives in the blasting of iron ore. Recently a demonstration was given by Liquid Air, Ltd., London, at the Redbourn Sheffield mine near Frodingham, Lincolnshire, when 1000 tons of hard bound ironstone was reduced to debris within one-half hour. The demonstration was witnessed by a number of Yorkshire, Lincolnshire and colonial engineers. The process was used by the company in 1914 but operations necessarily were suspended by the war. It is believed that the process as now developed is not only efficient, but much safer and more economical than the use of other explosives.

A. J. Bremner, the chief engineer of the company, who conducted the demonstration assisted by H. Stordley, explained that the process depends on the rapid combustion of a carbonaceous material in highly concentrated oxygen. The carbonaceous material he pointed out, such as sawdust, soot or ground cork, was made up into a cartridge by being packed in a porous paper envelope. The choice of material depended upon the nature of the explosion desired—rending or a shattering effect. The material used must have a large absorptive capacity, so that it can take up a sufficient quantity of the concentrated oxygen, supplied in the form of highly oxygenated liquid air, or even substantially pure liquid oxygen.

Illustrating the degree of concentration obtained by using oxygen in its liquid form, he pointed out that one cubic foot of liquid oxygen evaporated into about 750 cubic feet of gas at atmospheric temperature and pressure, or one cubic foot of liquid contained as much oxygen as some 3700 cubic feet of air. Therefore, he said, it was possible to construct a cartridge which would absorb more than sufficient oxygen for its complete combustion. The actual combustion takes place in the bore hole, and in a brief space of time—a fraction of one-thousandth of a second. The resulting gases are heated to a high temperature by the combustion and consequently exert an enormous pressure. The cartridges when made do not become an explosive until after soaking in the liquid air, and consequently they can be stored and handled as ordinary goods, no special precautions being necessary and no prohibitive regulations applying to them. This eliminates many dangers to the user and the manufacturer, such as fires, explosions, etc. The demonstration seemed to show that liquid air blasting can be used successfully in any non-gaseous mine, and is especially suitable for the North Lincolnshire and Cleveland fields.

Investigates Strength of Reinforced Beams

An important series of tests on the construction of reinforced concrete beams is being conducted at Purdue university, Lafayette, Ind., the investigation being carried on by the engineering experiment station through the school of civil engineering. The tests are being run for the Truscon Steel Co., Youngstown, O. The purpose of the investigation is to experiment in the use of a combination concrete and steel beam which is to be used for the framework in buildings and the spans of bridges.

Three beams are to be tested. The first had a 16-foot span and was designed to carry a load of 10,000 pounds, but under actual tests was found to support a load of 33,000 pounds before breaking. It was reinforced with two 1-inch rods and a 4-inch I-beam. The second beam has the same reinforcing and the same span but is constructed differently for experimental purposes. The third beam, which has a 20-foot span, is designed to carry 33,000 pounds but is expected to withstand 50,000 pounds before breaking. The principle of the type of construction is not only to strengthen the beams, but to carry the weight during the period of construction and thus to eliminate the use of a timber superstructure.

Engineer Must Take Leadership

Qualifications of Scientifically Trained Man Fit Him To Attack Problems of Government—Mass Production Accomplished by Engineer Who Now Turns to Mass Management—Pioneering Work Is Under Observation

BY DEXTER S. KIMBALL

THE most important changes wrought by modern methods upon industrial life are as follows: The separation of agriculture and mechanic arts that began hundreds of years ago has been completed and widened. The agricultural worker now depends upon others for his tools of production. Within the mechanic-arts group the actual worker has been separated almost entirely from the ownership of the tools of industry. A complex system of transportation independent of either of these older fields of occupation has been developed. And, lastly, both in transportation and the mechanic arts, division of labor has been extended to a degree unheard of by our ancestors and made possible only by the use of modern tools of industry. The resulting complexity of human relations coupled with the vast increase in population has accented the time-old problem of "what is mine and what is thine?" to a point where many people despair of a solution and openly advocate a return to simpler methods and consequent simpler relations.

This charge that modern civilization is a failure or at least no improvement upon former civilizations, is of peculiar interest to the engineer, using this term in its widest sense to include all industrial workers who use the scientific method. For modern civilization is largely what he has made it, and the civilization of the future will be largely what he wishes it to be. It is too much of course to claim that the engineer, unaided, can solve these difficult problems, but it is undoubtedly true that if he will direct his energies to the problem of the distribution of wealth as earnestly as he has devoted them to its production he can make a contribution to industrial economics that will be exceedingly helpful. The engineer, and he alone, has a direct and personal knowledge of the great industrial machine that he has created. Until recently he has entrusted the operation of this machine to others who often knew little about its refined mechanism. It is time that he took charge and operated this complicated mechanism himself.

It should be noted that the efforts of the engineer are no longer confined to the design and actual production of commodities. The principles of mass production that have so greatly reduced the cost of commodities he has now quite fully developed. The wide application of the principles of mass production has been made possible by mass financing, the work of the financier. The engineer, in turn, is now developing the principles of mass management, and his contributions to the philosophy of management are already noteworthy. Most business men would be surprised to know to what a large extent the methods of the engineer have invaded their field, and there can be little doubt but that the near future will see the engineering type of manager a predominant figure in all industrial administration.

This adventure into a broader field has brought the engineer for the first time face to face with the greater problem of human relations in industry and the distribution of wealth. In times past he has given little or no thought to these problems, but has assumed that they lay outside of his field. This assumption is no longer true, and whether he wishes to consider these problems or not, they confront him in this new field of industrial management. He cannot avoid the issue.

Lacks Knowledge of Economic Principles

It will be freely conceded that the preparation of the engineer for these new duties is far from adequate, and two of his shortcomings stand out conspicuously The first is his lack of knowledge of the economic principles of industry and commerce. It is true, of course, that the field of abstract economics is still far from being an exact science and many of its theories are controversial. But that is no excuse for a lack of knowledge, on the part of the industrial manager, of this important and growing subject which aims to replace ignorance and empiricism with accurately reasoned results. Furthermore, every engineer is by nature an economist. The location of an industrial plant, the design of a great power house, the location of a railway are all problems in economics, and the tangible things with which economics is concerned are familiar objects to every engineer. This need in the equipment of the engineer is now fully recognized, and in a fair way to be remedied. All first-class engineering colleges now prescribe more or less economic study and students of engineering recognize this study as a necessary part of their mental equipment.

Another important weakness in the mental processes of the engineer is his lack of knowledge of human nature and, worse still, his lack of sympathy with human problems. He is by nature a constructive individualist and usually impatient to obtain results; and, as a consequence, impatient of any obstruction, human or physical, that stands in the way of these results. And he is by nature a cave dweller given to introspection, unskilled in expressing his views verbally, and lacking usually in the companiable qualities that take strong hold upon subordinates. Of course there are many exceptions to these general criticisms, but in the main they are true. This weakness, no doubt, is responsible for the failure of engineers as a class to take an interest in all civic matters and the reason why they have been, until lately, a negligible factor in national affairs; though some of the present day national problems are of especial interest to all men of this calling. But it would seem that this difficulty is in a fair way to be overcome if one may judge by the great activity manifested lately by local and national engineering organizations in civic and national problems.

Over against these weakness of the engineer must be placed certain inherent qualities that strengthen his claim to industrial leadership. He is as a class essentially honest His entire training and professional experience are such as to demand honesty of thought and purpose in all of his transactions It is true, of course, that here also there are exceptions, but they are comparatively rare ones. Engineers as a class are honest, and if anything is needed today in management more than anything else it is this virtue

The engineer also often occupies a strategic position in industry which is of great importance in controversial matters. As the designer and planner of industrial enterprises he stands between capital and labor, and he is, not infrequently, better informed of the real difficulties at issue than are either sides of the controversy.

Furthermore, human progress must

From the president's address at the annual meeting of the American Society of Mechanical Engineers, New York, Dec. 4-8. Dexter S. Kimball is dean of the college of engineering, Cornell university, Ithaca, N. Y., and retiring president of the society.

rest to a large extent upon a knowledge of the experiences of the race. This is true in all lines of human activity and particularly true of a civilization that rests upon scientific achievement. The hope of the future lies largely in making accessible to all the great mass of accumulated experience that has come down to us. The engineer, of all men, has stood out pre-eminently in this respect as one who knows and uses classified knowledge to the fullest extent of his ability. The great leaders of the past had, for the most part, no conception of the importance of recorded experience. With few exceptions they took their knowledge and experience with them. The modern engineer has been the first to endeavor to reduce to written form the basic principles of industrial leadership, and his work in this field has already commanded worldwide attention.

Commands Scientific Problem

And last, but most important, the engineer has command of the scientific method of attacking problems. Wtih this he has practically solved the problem of production and is now rapidly rebuilding the field of administration. Is it unreasonable to suppose that he cannot make a great contribution to the problem of the distribution of wealth if he attacks this problem in the same wholehearted manner that he has applied himself to these other fields of activity? There is indeed very good reason to believe that if he makes proper preparation he will bulk large in the industrial leadership of the future.

All thinking men who know anything about industry agree that we are sadly in need of a new form of industrial leadership, but the source of this new leadership does not seem to be clear. And it should be noted that future industrial leadership will be closely associated with political leadership, so closely are the problems of industry linked with political administration.

There is good reason to believe that the legal type of mind is not likely to produce the much needed new industrial leadership. In fact, it is more than likely that the legal regulations of the future will not rest so much as heretofore upon ancient usage, but will be greatly modified in their viewpoint by the new industrial conditions. There remain for consideration two other types of mind from which a new industrial leadership may come, namely, the business or financial type, and the scientific type. The business type of mind with the aid and counsel of the legal and engineering fraternities has built up modern industry as we now see it. There can be little doubt as to the ability of this type of mind to plan and direct the larger aspects of industry along existing lines. One weakness of this type of mind lies in its apparent inability to appreciate or rather to acknowledge that a new industrial day has dawned in which industry is being viewed more and more as the support of human life and not as a means of producing private, corporate, or state profits.

Another weakness of this type of mind is its lack of technical knowledge of modern industry. As industry becomes more and more complex the business man is compelled to depend more and more upon the engineer for advice and knowledge. It is this phase of modern industry that is rapidly forcing the role of industrial manager upon the engineer. The truth of these statements is shown in considering complex industrial problems like the 12-hour shift, which is partly at least a technical problem. The best report upon this subject that has as yet appeared is the report of the committee apointed by the Federated American Engineering societies. It is the best because it is based upon accurate technical knowledge of the industry and not upon speculative hearsay as most of these industrial reports are. If the new industrial leadership comes from the business world, the business type of mind, will have to be greatly modified.

May Accept Challenge

No one would presume to say that the engineer alone can solve the industrial riddle, but it is clear that he can make a great contribution to the solution. But it becomes increasingly clear that hope of a solution rests with the two groups just discussed. The national department of education has for some time been advocating strongly that engineering students be taught more of the fundamentals of business and that young men preparing for the field of business and commerce be instructed in some of the outstanding features of engineering. And it may be that we shall yet develop a combination of these two fields that will produce the new type of industrial leader. But whether the new leadership comes from one field or the other, or from a combination of the two, the problem of universal well being offers a challenge and a call to duty that the engineer may not refuse. The primary condtions and responsibility of universal well being now rest upon his shoulders, and the engineer does not like to be concerned with a half-finished job.

Already there are significant signs that he has accepted this duty. The activities of city, state, and national engineering societies in all manner of civic problems in which they are competent to express an opinion needs no rehearsal here. A few years ago it was unthinkable and unbelievable that an engineer should hold a high political office. Yet today we see with great satisfaction two engineers occupying gubernational chairs. More encouraging still we see an eminent engineer chosen, for the first time, to sit in the presidential cabinet. These are pioneer adventures in a field that hitheto has been considered the exclusive territory of the lawyer and the politician, and their experiences are being watched with great interest by all thinking engineers. They are undoubtedly the vanguard of a larger invading army.

Adopts Specifications for Leather Belting

Government purchases of leather belting in the future will be made according to a set of federal specifications worked out by a joint committee of the bureau of standards and the Leather Belting Exchange and adopted by the government. The specifications provide an accurate description of first quality leather belting and outline the tests which shall be made.

These tests may be applied in any physical laboratory. Briefly the tests are as follows: First, the average tensile strength of five samples of single belting must be 3750 pounds per square inch, or more, and the minimum strength of any one of these five samples must be not less than 3000 pounds per square inch of cross section. Second, the average elongation of the five samples at a tensile strength of 2500 pounds per square inch shall not exceed 15 per cent. The belt itself shall be suspended in a vertical position and sufficient weight, including the weight of the clamp, shall be attached to the lower clamp to produce a tensile stress of 750 pounds per square inch of the average cross section. After 15 minutes suspension this section of 10 feet shall show a length between gage marks not to exceed 10 feet 7.2 inches, or 6 per cent stretch. Third, the clamps shall then be removed and the sections allowed to lie loosely on the floor for 17 hours, after which time the length between gage marks shall not exceed 10 feet 1.6 inches, or 1 1/3 per cent stretch. Fourth, the leather shall not show wrinkles or piping on the grain side when bent through an angle of 180 degrees, grain side in, over forms specified for different grades and thicknesses.

Application of these four tests will expose any further stock which may be tested. An unusually high tensile strength, coupled with an excessive stretch and low elasticity, would indicate lower edge stock, which the piping test would confirm. On the other hand, a moderate tensile strength slightly above the specifications provision with stretch within the limitations and elasticity as provided, will indicate superior material.

Discusses Foundry Problems

Tales from the Gangway, by Pat Dwyer, engineering editor *The Foundry;* cloth; 450 pages 6 x 9 inches with frontispiece and over 200 illustrations; published by the Penton Publishing Co., Cleveland and furnished by IRON TRADE REVIEW, Cleveland, for $3 net.

Something distinctly unique in the way of technical literature is presented in this work compiled from articles that have appeared in *The Foundry* over a period of several years. Bill, the typical foundry foreman who followed the hobo trail in the days of his youth recalls in an interesting manner events and incidents in a variegated career that embraced brief sojourns in foundries scattered from Canada to Mexico and from the Atlantic seaboard to the Coast.

Shrewd observation and kindly humor characterize his references to people and events connected at times with the foundry industry and, at other times, not even remotely related. Some of the best chapters deal in highly entertaining, burlesque manner with popular misconceptions prevalent among those benighted human beings who have not had foundry experience.

For the benefit of those who may not have read the articles as they appeared originally it may be stated that the purpose of the book is serious. Each chapter deals in an authorative manner with some specific phase of modern foundry practice and therefore reflects the latest and most modern development in the industry. The series of articles on pattern mounting methods is the most complete and illuminating that ever has been published. The same applies to the various chapters dealing with cupola operation, gear and sheave molding, coremaking and preparation of sand.

The language employed is informal and as far as possible nontechnical and in that respect the book should serve as a valuable text book on American foundry practice not only to students but also to those of extended experience. The text has been kept free from reference to the purely obvious, or what may be regarded as ordinary routine practice and deals only with prominent and outstanding features, a knowledge of which is required by the man who desires a comprehensive and rounded out acquaintance with every branch of the business, including modern core making, molding and cupola practice. Not the least interesting feature of the book is the profusion of line drawings and cartoons that enliven the pages.

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Describes Life in Mills

The Iron Puddler, by James J. Davis; cloth, 276 pages, 5 x 7½ inches; published by the Bobbs-Merrill Co., Indianapolis, and furnished by IRON TRADE REVIEW, Cleveland, for $2 net.

The life of the present secretary of labor, as told by himself, is set forth in this book in an interesting way. From the time Mr. Davis first was announced as the President's choice for the labor portfolio, the secretary has been known as a man who rose from the ranks as a steel mill boy. Just how this was done is told in this book.

Contrary to expectations, the story is not crammed with personal experiences of the secretary. Perhaps that is to be expected of a man of Mr. Davis' characteristics. The major events, of course, are set forth, but the book in the main leaves the impression of a sermon on labor, ably delivered and suggestive of better things to come of the relations between employer and employe.

From employe to employer, and then in a high position to harmonize differences of the two, Mr. Davis gives his ideas. He defends capitalism as the only system which has banished famine and he attacks communists, reds, and other labor radicals with a vigor to be admired. His story is a plea for honest toil, adequate pay, thrift, contentment and brotherhood of man.

Mr. Davis tells the story of Mooseheart, Ill., where under his direction the Loyal Order of Moose has established a home and school on the principles and tenets recited in his life story. The book contains 49 chapters, no illustrations aside from a photograph of the subject of the story, and an introduction by Joseph G. Cannon, former speaker of the house of representatives. The story of the iron puddler is one that can be read by steel mill worker or operator with the knowledge that he has gained something when he has finished.

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Explains Heat Treating Processes

Steel Thermal Treatment, by John W. Urquhart, cloth, 336 pages 5 x 9 inches, published by D. Van Norstrand Co., New York, and furnished by IRON TRADE REVIEW, Cleveland, for $8 net.

Men actually engaged in engine and machine building trades realize fully the great advancements that have taken place in reference to the heat treatment of iron and steel, and the revolution that the treatment has produced in these trades. The time has passed when the steel, as received from the maker, was worked into machines without treating, and when it was not realized that heat treatment would add to the physical strength and effectiveness of the steel. Recently great improvement has been noted in the working of old established types of steel, and these have been followed by the introduction of many alloy steels, possessing rather startling characteristics which can be attained only through the many different heat treating processes. The knowledge that has been gained has led to the development of more exact systems of applying heat, under strict methods of time and thermal measurement. The introduction of the electric furnace has assisted greatly in the solution of this problem.

The author of this work has been engaged in the production of machinery and various steel components and tools for many years and has had

the opportunity of putting into practical use all of the recently introduced processes employed in the heat treatment of steel. This work, to some extent, is an effort to co-ordinate the work of the laboratory and the engineer in the hardening department. The book has 14 chapters dealing with such important subjects as the physical characteristics of steel, elementary thermal processes, types of furnaces, recent developments in heat treating, processes required in tool manufacture, etc. The book is well illustrated with charts, sketches and photographs. A series of photomicrographs, depicting the actual conditions of steel at the various stages of the heat treatment, chilling and tempering also is included.

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Compares Foundry Practice

A Comparison of British and American Foundry Practice, P. G. H. Boswell; paper, 105 pages 5½ x 8½ inches, published by the University Press of Liverpool, Ltd., Liverpool, England, and furnished by IRON TRADE REVIEW, Cleveland, for $1 net.

During recent years, it has been realized that the world is becoming more and more dependent upon the use of castings. Skill in foundry practice has been developed to such a degree that castings of 160 tons are now being made as well as the great variety of smaller sizes. Castings have steadily replaced forgings and structures built of other materials, and the heat treatment to which they are now subjected has made them suitable for use in many new and diverse ways.

Realizing the importance of the subject and the value to the British foundrymen of information gathered from foreign countries the author was sent to the United States in 1918 by the Minister of Munitions to report upon American foundry practice, particularly with regard to the use of sands for steel molding. The investigation was conducted along three general lines. In the first group visits were made to iron, steel and brass foundries and conferences were held with managers, metallurgists and others concerned with the problems. In the second case the quarries and sources of raw refractory materials used in the industry were inspected. Visits also were made to universities and technical institutions likely to carry on research on the problems under consideration.

This book is a report of the inspection made of American industries. The last chapter is a comparison of the American and British methods. Tables showing the results of analyses made on samples secured during the visit in this country also are included.

Canada, with 41,417 tons, was the largest buyer of iron and steel from the United States in September, the iron and steel division of the department of commerce states. Japan was second with 22,328 tons.

Proposes Lines of Foundry Research

BY JOSEPH HORTON
British Correspondent, Iron Trade Review

IN AN address delivered before the Coventry branch of the Institution of British Foundrymen, Percy Longmuir, who was appointed director of the British Cast Iron Research association, a short time ago, said that during the war a vast amount of research was done which greatly advanced their knowledge of foundry practice, though the bulk of it was not for publication. While considerable progress had been made, the speaker indicated several directions in which a great deal of research still is required.

Dr. Longmuir has addressed large bodies of foundry workers in Sheffield and they now have established the Sheffield Foundry Trades Technical society which is to serve the various classes of foundry workers and interest them through papers given on various phases of their daily work. After citing several discoveries in the Sheffield district showing the great antiquity of loam molding, the speaker dealt in detail with several problems which, in his view, were still unsolved.

A problem hotly debated whenever foundrymen meet is that of clearing the mold; whether the mold should be cored out, or whether it should leave its own cores. Refractory materials, including molding sand, call for vast research. In connection with molding sand, the preparation of a mold is not merely a matter of resisting a given temperature; the surging or penetrative action must be considered. If two molds identically prepared and filled, one with molten lead at 400 degrees Cent. and the other with Admiralty gunmetal, the latter will come out, whereas the lead will surge and show a veined appearance, as if overheated or burnt. That shows the necessity for studying the character of different molds.

It is a good general rule to avoid oxidation, and in brass foundry practice all volatilization losses should be made good. This applies chiefly to zinc, in which all loss should be replaced to secure the desired composition. In the same class of work, care should be taken to weigh in the different charges of known materials. Impurities work sad havoc on the final result. Similarly, the scrap should be separated. If that is not done the foundrymen producing carbon steel, manganese, chromium or steel having any other alloy has no chance of success. This is still more necessary in brass foundry work in view of the different melting points as between gunmetal, phosphor bronze and ordinary yellow metal. As a commercial proposition, obviously turnings and borings should be divided into their different qualities. The series of brasses and bronzes based upon the 60-40 copper zinc content require study.

Where ordinary pig iron is converted into steel, oxidation is essential. In a typical charge, blown in a bessemer converter the melter started with 2½ per cent silicon and finished with 0.08. The purification of the pig iron was effected by the oxidation of the blast blown through it, and in some foundry operations oxidation is equally essential, but it is minimized by the cooling action of any manganese silicon or aluminum added, and that branch of metallurgical study would repay the time given to it.

Another side of foundry practice worthy of the keenest study and research is that of the fluidity or running quality of metals, which in the case of alloys is strongly affected by the different melting points ranging from 419 degrees Cent. in lead to 3200 degrees Cent. for tungsten. Liquid shrinkage and contraction present many points for further research, especially in castings having different thickness. Gating often is the cause of warping. Casting temperature is a matter calling for a great deal of careful investigation as tensile and elongation results in regard to all metals often are affected vitally by additional heating for only a couple of minutes. In this connection, the influence of mass and size require careful consideration in the selection of the proper pouring temperatures. For many metals however, it is the best plan to overheat and afterward cool down.

Industry's Problem, Distribution

Wasteful Methods Due in Part to Excessive Competition Making Prices to Consumers Prohibitive—Too Many Agencies Now in Field—Public Opinion May Force Great Changes—A Task for Management

BY O. D. STREET

OF THE many complex problems confronting the American business man today there is none, if we may judge by current literature, which is more baffling than the question of distribution. Publishers tell us that approximately 80 per cent of the books and pamphlets which have been written on business questions during the past three years have dealt altogether, or in the main, with the problem.

The attention which the subject is receiving augurs well for the future, for who can doubt the ability of American business men to solve the problem once they seriously address themselves to it? That trait in our business men which has developed the degree of efficiency we find in other phases of our industrial life can be trusted to develop efficiency in the field of distribution.

In a country with a population of 106,000,000, covering an area of more than 3,000,000 square miles—a country dotted as this is with thriving growing cities and towns throughout its length and breadth, and with all these growing trade centers connected by the most highly developed system of communication and transportation possessed anywhere in the world under such conditions, there can be no doubt as to the need of middlemen.

With us, something like 60,000,000 of our consumers derive their sustenance from agriculture and mining, the sources of our basic raw materials. It is inconceivable that the necessities and luxuries of life, which are purchased by these 60,000,000 consumers can be moved economically from the industrial centers where the finished product is made to the small cities, country towns, farms and ranches without employing in the process distributing facilities offered by middlemen.

However, to say that the middleman is a necessity in our economic life is something very different from saying that the middleman is a necessary link in the distribution of every commodity or is a necessary agency for disposing of the output of every factory. The middleman is not essential to all these, and middlemen as a class hurt not only their just claims for recognition, but they place themselves squarely across the path of industrial progress by contending that they are an essential link in the distribution of all things.

Contrary to what some seem to think there is no social movement developing which by its momentum will eliminate the middleman. But there is, and rightly so, a rapidly growing demand that the waste incident to present methods of distribution shall be eliminated. Any established trade channel which can prove its efficiency will survive, otherwise it should and will fail.

Distribution is too often thought of not only by the public at large but sometimes by the distributors and producers as being a standardized method available for use in the process of transferring commodities from the factory to the consumer. As a matter of fact there is no such thing as a standard plan by means of which commodities may be distributed most economically. Intsead of there being one right way of marketing there are many right ways. What the right way is for any producer can and must be determined by the producer, not by chance, not by rule of thumb, but as the result of a comprehensive, intelligent analysis of his own problems and products.

Such an analysis may not prove that it is wise for a manufacturer to sell all his products direct to the consumer, nor will it of necessity prove that he should work through wholesalers in marketing all his lines. Instead, it may prove that for a manufacturer who is not making just one thing but many things the best plan would be to work directly with the consumer on one or more of his commodities to go direct to retailers on other of his commodities, or to work exclusively through wholesalers on still another group of his commodities.

If the analysis is made carefully the one best way for marketing each product of each manufacturer should be determined rightly nine times out of ten.

I have heard it said that about 80 per cent of our merchandise is sold by the makers to wholesalers who in turn supply the retailers. A smaller percentage is sold direct by the makers to the retailers, and a still smaller percentage is sold direct by the makers to the consumers. All these methods are good and will continue to be employed. Which method to use is the problem each producer must decide for himself, and the problem will be solved first by those concerns which possess a type of a management wherein is to be found the searching mind, and wherein lies the will to find the correct answer.

Among the more controlling factors which must be considered by each producer who would get the right answer are these:

I. *The nature of the product.* A large steam engine should be sold direct to the user, whereas hair pins to be marketed economically must be sold to wholesalers and possibly to large retailers.

II. *The number of customers served.* A few users even though widely scat-

Summed Up

BUSINESS is far from being a pure science. It is a science, nevertheless, but the trouble with business men is that they have confined their scientific research largely to the field of production, and have applied little or none of it to the problems of distribution.

"As an inevitable result, the superior skill which has been applied to production problems has caused production efficiency to get far ahead of distribution. The production skill which industry has developed has gone out and started competing factories until today we find ourselves confronted with a situation where the capacity to produce, in most industries, vastly exceeds the country's capacity to absorb; at least to absorb at the prices now quoted to the consumer."

Paper read before convention of Associated Business Papers, New York, Oct. 12. The author is general manager of distribution, Western Electric Co., New York.

tered can usually be served best by dealing directly with the factory provided the money value in each sale is large. A great many customers scattered all over the country can as a rule be served best through jobbers particularly if the value of each sale is relatively small.

III. *The aptitude of the management.* Some executive families are experts at production but ought never to try distribution. The two require quite different commercial characteristics, and management should know its weaknesses as well as its strength.

IV. *The financial resources.* Where capital is limited it is often preferable to use all that is available in production rather than to skimp on plant, tools and other instruments of economical productions to carry the capital obligations involved in distribution.

At present too many concerns are selling their own products direct when they would be better off if they worked with jobbers. There are also too many of another class which would be better off if they cut out the jobber and dealt direct with the retailers and consumers. By the same token, there are jobbers who would be better off if they limited themselves to those items which they can handle better and more cheaply than the factory.

The reason why so many uneconomical methods of distributing are employed today is because so little is known even by the most expert of what it costs to sell and distribute merchandise. The monthly or annual costs of distributing all the products of a mill or all the lines of a jobber are known, but while these figures tell us how much money is made or lost on the entire business they do not tell us how this money is made or lost. How antiquated is such a condition in production activities!

Cost-finding System Needed

Methods are available today as a result of the development of the accounting art which will show us almost exactly what it costs to manufacture each item and each part in an item, but there is scracely a concern in the country which knows what it costs to sell any one of its articles, unless it makes only one article, nor a concern which knows what it costs to sell to any one of its customers. A knowledge of what it costs us to sell each article we make and what it costs us to do business with each customer we serve is a prerequisite for determining whether we can distribute those articles and serve these customers cheaper and better than we can hire the work done for us. The facts must be determined by each producer for himself as he alone can get at the facts.

The very first thing which is needed is the development of a cost-finding system which will give to each manufacturer a statement as to what *it* costs him to distribute each individual article he manufactures and what it costs him to serve each customer he sells to. Our shop cost-systems have been highly developed, but little or nothing has as yet been done by accountants in any line of industry toward the development of a cost-finding system which gives to management even an approximate concept of what expense is involved in the sale and distribution of his individual commodities or of what it costs to sell to his individual customers.

The time may come in the development of the accounting art when at a reasonable cost fairly accurate data as to the selling cost of each individual commodity sold may be determined. But as a safeguard not only for industry's bank balance, but as a safeguard as well against discouragment which will stop all research, my advice to management would be ascertain first of all what it costs to distribute those few articles which usually comprise a relatively large percentage of annual sales. I know of many manufacturing plants where as few as 10 per cent of the articles produced account for as high as 90 per cent of the annual business done.

It must be clear to all of us that he who would go further into his distributing problems must first of all find out what his present methods of distribution cost him. I venture the prediction that a study of this sort will prove to many executives that many commodities which they have thought were highly profitable will be found at least under the methods of distribution now employed, to be money-losers rather than money-makers. It may well be that even after that knowledge is secured management will still feel that it must continue to sell these articles because they are necessary to complete the line. However, the chances are that the method of selling these things will be changed, else less money will be spent in attempting to sell them.

Business is far from being a pure science. It is a science, nevertheless, but the trouble with business men is that they have confined their scientific research largely to the field of production, and have applied little or none of it to the problems of distribution. As an inevitable result, the superior skill which has been applied to production problems has caused production efficiency to get far ahead of distribution. The production skill which industry has developed has gone out and started competing factories until today we find ourselves confronted with a situation where the capacity to produce, in most industries vastly exceeds the country's capacity to absorb; at least to absorb at the prices now quoted to the consumer.

Competing Factories Increase Prices

Why is it that the price is so high that more commodities cannot be sold? It is not because the maker, the middleman, the retailer or anyone else, except in isolated instances, is profiteering. The answer is twofold: In the first place it is because the new competing factories turn out no more or as many units than did the original factories; hence as a rule they do not produce at a lower cost. In fact, too often the tendency is to make production costs rise, since the new competition, rather than to dispose of its products by creating new markets, usually cuts into the business held by the older factories. In the second place, new producers in order to market their products often appoint a separate group of wholesalers and dealers, and these in turn cut into the business done by the old established distributors.

At first, competition may and often does tend to reduce the price to the public. Soon however, the heat of contest cools. Each organization decides to add the increased overhead cost incident to a lower volume of sales to its selling price, so it is passed along to the public. As time passes still more producers enter the field to share the new business and divide the old, and these in turn create new distributors whose competition tends still further to complicate the situation and add to the ultimate cost of the product.

This sort of thing, in its effect on prices is bad enough, but what would have happened long ago if the rapid growth of our population had not caused consumption to increase tremendously? In 1870 our domestic population was 38,000,000. In no decade since then has the population increased less than 12,000,000 and in the 20 years between 1900 and 1920 the population increased 30,000,000. Furthermore, we must remember that beginning with 1914, our normal increase in consumption was for six years greatly enhanced because of the country's marked prosperity which increased the purchasing power of every-

one, especially that of the so-called laboring classes.

At present the domestic consumer is not buying as much as he did, for his income is less; then again, we are restricting immigration. Furthermore, due to conditions abroad our exports which we have been accustomed to look to for absorbing our surplus production are relatively low.

Producing and production capacity, distribution and distribution facilities have all multiplied during the last 10 years, and now despite the reduced demand, all are trying to make a living, and nearly all are finding the going pretty slow. All cannot survive, and it is not to the interest of the public at large that all should survive. The "forty-niners" made a go of it by panning for gold by hand; today the picking is thinner, and more efficient methods are employed.

This situation we are in would indicate that for the good of the public at large too much competition may well be as bad as too much monopoly, for it is a recognized fact that mass production, up to a certain point at least, is required to effect low production costs. Too much distribution, that is too many middlemen, is just as bad; for a low volume of sales increases the distributing expenses per unit sold, just the same as at the factory a small output increases the costs per unit produced. In both instances there is the natural tendency to pass the increases on to the consumer.

Public Opinion to Count

There can be no doubt as to what all this hue and cry we hear today about distribution and present distributing methods means. It means that public opinion in our commercial life, is becoming synchronized. Our people in general do not readily get excited over either policital or commercial questions. But if the time comes when failure to act on the part of those whose duty it is to act stirs the patriotic conscience or drains the pocketbooks of an appreciable percentage of the people, then it behooves the politicians or the merchants to act, and act rightly.

The man in the street is not a statesman nor is he an expert on business problems, nevertheless he does love his country and he loves his home and kin. Because of these loves, he is bound to demand and sure to fight for that which promotes their interest and welfare. He does not know what is wrong in the business organism, and not being an expert he cannot find the answer, but composite public opinion of which his thinking is a part is going to insist that management find the answer.

All he knows is that he has gone to a retailer to see if he can buy a certain labor-saving device for the home, which he had wished to procure for his wife to relieve her of some of her drudgery. The price quoted was $125, and in spite of his good intentions he has decided he cannot make the purchase as he is unable to afford so great an expenditure.

Upon getting home that night he is told by his son, who works in the cost department of the factory where the device is made, that the factory cost, including labor, raw material and all overhead was but $50. "Why," he asks, "must I pay $125 for an article which can be made for $50?"

Because he is not familiar with the ramifications of commercial transactions he assumes someone is profiteering. The retailer assures him that it is not he who is profiteering, but agrees with him that the price is too high and insinuates that the trouble lies with the middleman and the producer. The middleman in turn admits that the price is too high, yet tells him, and as a rule truthfully, that he has made no net profit out of the transaction and that if anybody is profiteering it is the producer or the retailer. So he gets no satisfaction, but he does not forget that somewhere between production and consumption $75 is being spent on an article which it costs $50 to produce.

While he is no expert, he has a "hunch" that such a condition is all wrong and I agree with him. Yet at this moment there are probably 50 men, engaged in production and distribution, who are saying that the answer is to still further raise the retail price and make the allowance to the distributors greater, to every one man who says "No, that is not the answer—the answer is to change production and distribution methods so as to permit of a reduction in the price charged to the consumer."

The example cited above is typical of a thousand more just like it, and all the explanation in the world, not even the combined efforts of all the newspapers and trade papers in the country, can make this sort of thing seem right in the minds of the buying public. The only thing with which the public will be satisfied is a different sort of set-up, and it is up to management to find the answer and lead the way. The theory that such expenditures are necessary to a proper system of marketing is absolutely baseless.

In the main there is no profiteering anywhere along the line either on the part of the producer, the wholesaler or the retailer in connection with the sort of commodity above referred to. At best, only a modest net profit was left to any party in the process. The trouble is not that those who are engaged in production and distribution today are profiteering. The trouble lies with the system employed, with the methods followed. It is these which must be changed. Present methods are wasteful. Ways and means must be devised for eliminating this waste.

Factories Not Reaching Capacity

I have just referred to a semiluxury which as made costs $50 and as marketed sells for $125. The statement that neither the jobber nor the retailer made much if any net profit on the transaction will to the layman sound absurd, yet it is the truth. However, the identical article, and there are a thousand others of which the same can be said, could be so made and so marketed as to enable the public to buy it for $75 and still allow ample net profit for the maker, for the jobber and for the retailer. The trouble is due to the excessive competition that exists. Factory costs are too high because too few units are turned out; the wholesalers' and retailers' expenses are too high because too few units are sold.

A few years ago dealers were well satisfied if they could buy at a discount of 25 per cent, but today discounts of 40 to 50 per cent and occasionally 60 per cent are more or less standard for furniture, rugs, carpets, refrigerators, stoves, pianos, phonographs, etc. Goodness knows what discounts the dealers of tomorrow will ask for and possibly require unless production and marketing methods are changed.

One thing we need is more men who, like Henry Ford, can visualize a possibility for trade development, and who will by mass production and by rapid turnovers in distribution, produce and market a product which will make the public feel when they buy it that they have secured their money's worth and then some. More men with brains and capital who will "Fordize" in the production and distribution of a certain class of commodity is, I believe, the answer to a part of the question.

The inspiration that would result from a few more successes like that of the Detroit manufacturer should be most beneficial.

Simply as a thought to indicate the direction toward which I feel we should be working, let us assume that in each trade territory there were but two stove manufacturers each of whom had large productions and each had but one dealer in each town in the territory. Who of us believes he could not find dealers who would gladly take on one of those agencies and be satisfied with far less than a 40 per cent commission? Under such conditions a commission of 20 per cent would result in the dealer's earning a higher net return on his investment than a 40 per cent commission allows him under existing conditions of excessive competition. I am simply saying that a small margin of profit on many sales can be made far more profitable than a larger margin of profit on a few sales. Too much competition on production and in distribution tends to make the production cost high and distribution expense high; the combination inevitably results in a high price to the public.

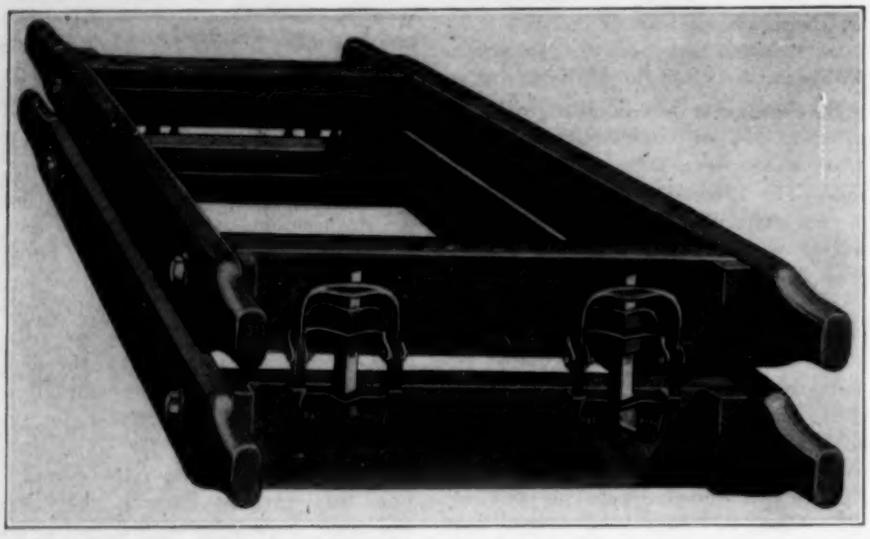
There are too many commodities which are being produced in too many factories, and are being distributed by too many agencies, for the best interest of the public. I feel many of these could be made and marketed more economically if some advantageous mergers were effected, or some failure took place. This would by no means solve all our troubles nor eliminate all the waste in merchandising. However, it would help considerably, for production is not done at low cost unless the output is reasonably large, nor can a jobbing business be conducted cheaply unless the units of sale are relatively large and frequent. Retailing can be done cheaply if the units of sale are small provided enough units are sold.

Another major experiment in marketing which is receiving much attention, but not as much as it deserves, is the chain-store idea. Here again, mass production and rapid turnover in distribution is counted on to reduce prices to the consumer and yet leave adequate margins for dividends. The idea is perfectly sound. Good judgment in selecting the products and sound management will produce success. I am not among those who worry lest the chain-store will wreck the local merchant for in marketing I believe in the survival of the fittest, provided the test of fitness is that agency which serves the public well and at the lowest cost. We must not forget that we are confronted with a changed economic condition, and management will do well if it falls in line, for that business which falls in line with an economic purpose bigger than itself has far and away the best chance of remaining permanently in business and of making steady profits.

I am sure you will not interpret my remarks to mean that I feel we should do away with competition in production and in distribution for that is very far from my thought. It is competition and the will to excel among competitors which develops skill in a football team, so likewise it is the stimulating effect of competition which more than any other factor has and will continue to develop efficiency in our business enterprises. Competition we need, but more of the efficient, waste-saving, cost-reducing competition.

It is more businesses intelligently planned, adequately financed, and capably managed in each line of industry that are needed before management can hope to convince the great mass of our people that the waste incident to present methods of production and distribution has been eliminated. Unless and until this waste is eliminated, at least until it is greatly reduced, the American business man cannot rightly be called "efficient."

Opportunity knocks at management's door. By opening it management can still further enrich itself and in doing so, do that bigger, finer thing—add to the comfort and contentment of man.



NEW TYPE OF LIFT PIN WHICH RAISES THE COPE OF A MOLD 1¼ INCHES

Applies Leverage To New Lifting Pin

By applying a positive leverage in the act of lifting a cope, a type of lift pin designed and manufactured by the U. S. Selling Co., 2755 North Washtenaw avenue, Chicago, separates the mold from the pattern in exact line and without jar. The accompanying illustration shows the application of the pin. The handle exerts a leverage of 3 to 1 and starts the mold steadily and in true alignment, this leverage acting until the cope is about 1¼ inches from the pattern, the long guide pin holding it in line for the remainder of the distance.

The pins can be applied to old or new flasks, of either type, common or snap. They are malleable and have long life, and can be transferred from wornout to new flasks. The purpose is to reduce the patching required due to damage in lifting off the pattern.

Reviews Development of Titanium Products

"Titanium Products and Their Development" is the title of research narrative No. 45 as published by the Engineering Foundation, 29 West Thirty-ninth street, New York, on Nov. 15. Andrew Thompson, general manager of the Titanium Alloy Mfg. Co., Niagara Falls, N. Y., is the author of the discussion. The pamphlet reads as follows:

"About 1830, Archibald MacIntyre, David Henderson and associates purchased a large tract of land in Essex county, New York, in the heart of the Adirondack mountains. This deposit was brought to their attention by Indians, who had visited a small forge in Keene valley, where iron ore was being smelted. The red men told of a great body of similar material forming a dam near the head waters of the Hudson river. The white men accompanied them to this

spot, and having examined the surrounding country carefully, soon arranged for a purchase totaling several square miles.

"Despite the extreme ruggedness of the country and the fact that these ore deposits were 40 miles from Lake Champlain, these hardy pioneers in 1840 erected a small charcoal furnace. This furnace was remodeled in 1848, and in 1852 a much larger furnace, 11½ x 48 feet was built and operated successfully. The operation of this furnace was continued until 1856, when for various reasons, its operation was discontinued.

"This old furnace, still standing, in fairly good state of preservation, recently was examined carefully by experts. Their report to the present owners of the property was conclusive that no serious difficulties had been encountered in smelting titaniferous ores.

"As years rolled by there grew up a prejudice against the use of titaniferous ores in blast furnace practice, and about 1890 Dr. Auguste J. Rossi, whose name has since become well known because of his work on titanium, was engaged to demonstrate that titaniferous ores could be used successfully in blast furnace practice under more modern conditions. He produced an alloy of iron and titanium, which it was found later was a most efficient deoxidizer and cleanser for the treatment of steel because of the great affiniy of titanium for both oxygen and nitrogen, and also because of the property of titanic oxide, formed by the oxidation of titanium, of combining with other slags and oxides and increasing their fusibility, thus effecting their release from the steel by rising to its surface and combining with the slag. The present extensive manufacture and use of ferrotitanium is a result of this pioneer research of Dr. Rossi and indirectly of the early work of MacIntyre, Henderson and their associates.

"Some 10 or 12 years ago, in the research departments of the Titanium Alloy Mfg. Company, Niagara Falls, N. Y. the extreme opaquing or hiding power of the white pigment, titanic oxide, when mixed with oil was noted. It was found, however, that to manufacture titanic oxide to compete with other opaque white pigments would be practically impossible. Further research demonstrated that a composite pigment consisting of only 25 per cent of titanic oxide thrown down on a base of precipitated barium sulphate, probably because of the wonderful fineness of the particles and maximum distribution of the titanic oxide, actually had approximately 80 per cent of the hiding power of a pigment consisting of 100 per cent titanic oxide.

"This research followed by careful tests to demonstrate the availability of this composite titanium pigment brought out the fact that such a pigment had greater hiding power than any white pigment known, was exceedingly inert to various vehicles (oils, etc.) and other pigments, was nonpoisonous, and had many properties which made it unique among pigments. After several years of research development, this pigment is now being manufactured in large quantities in this country and Norway.

"Already many uses for the element titanium have been suggested and no one can safely predict the limit of this development, which originated 75 or 80 years ago, when a few venturesome men attempted the seemingly impossible task of manufacturing iron in the wilderness."

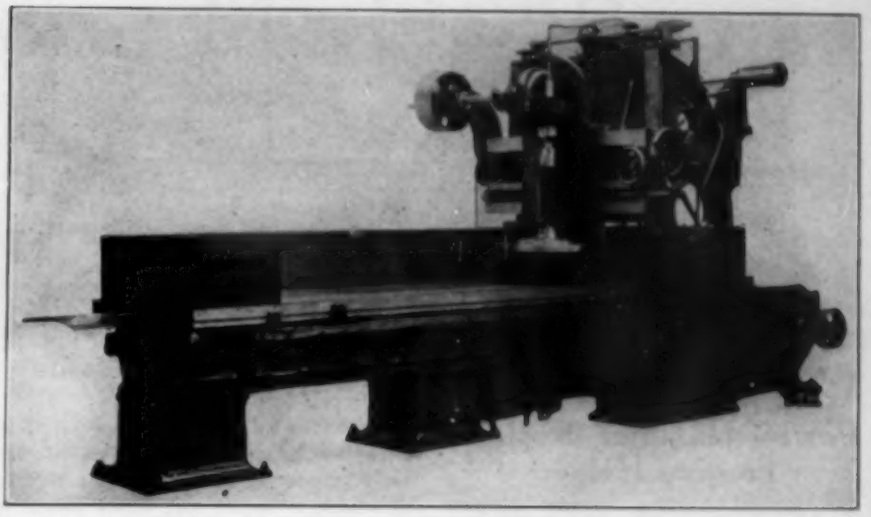


FIG. 1—PLANER TYPE GRINDING MACHINE EQUIPPED WITH A VERTICAL SPINDLE AND A CYLINDER WHEEL

Develops Two Types of Surface Grinders

The labor saving possibilities of surface grinding practice are evidenced by the diversity of machines now manufactured for finishing accurate planes with abrasive wheels. In many instances these machines are capable of finishing castings and forgings from the rough, thereby showing a substantial saving of stock, as a minimum allowance only is necessary for grinding. Again, work can be surfaced readily by grinding, while the results are far more accurate than usually are possible when a planer or miller is employed.

The machine shown in Fig. 1 is a planer type surface grinding machine recently developed by the Springfield Mfg. Co., Bridgeport, Conn. It embodies a substantial bed over which the platen travels. This member is actuated by a cross and open belt arrangement as used on an ordinary iron planer. The grinding wheel head is supported on a substantial bracket that slides over a crossrail which, in turn, is located on two housings. Automatic feeds are provided and auxiliary power arrangements for raising and lowering the wheel head and the crossrail.

This machine was designed originally for surfacing large dies and it has developed into a useful machine for surfacing automatic engine blocks, crank cases, oil pans, and a general run of large surfacing work. The machine illustrated in Fig. 1 accommodates work 42 inches wide and 10 feet long.

The machine shown in Fig. 2 also was developed by the same company. This is a double-end ring-wheel grinder. It was designed to conserve floor space as two operators can work on it simultaneously. The machine has a substantial base with knees and saddles for carrying the platens, which are hand actuated. The platen traverse is 30 inches. The grinding wheels are 24 inches in diameter, 7-inch face and 2-inch rim. These wheels are located in special holders.

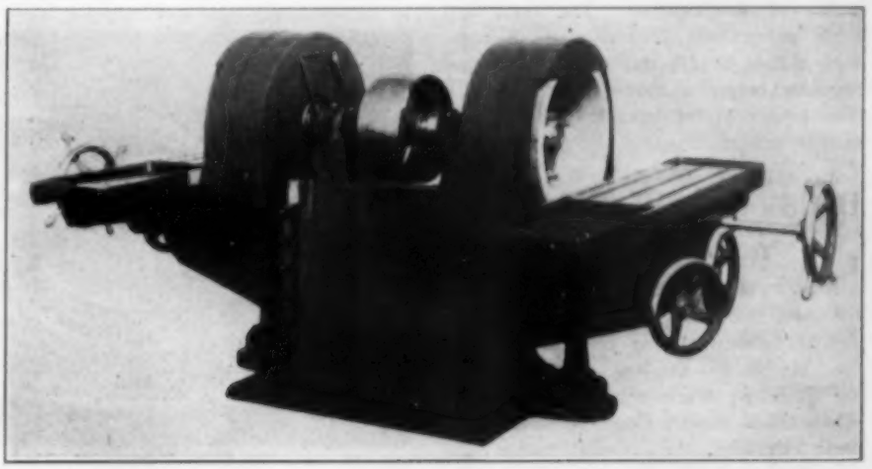
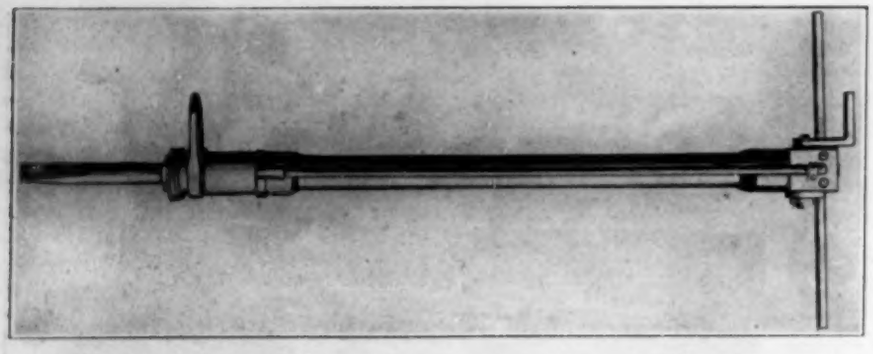


FIG. 2—DOUBLE HEAD TYPE OF SIDE SURFACING GRINDING MACHINE

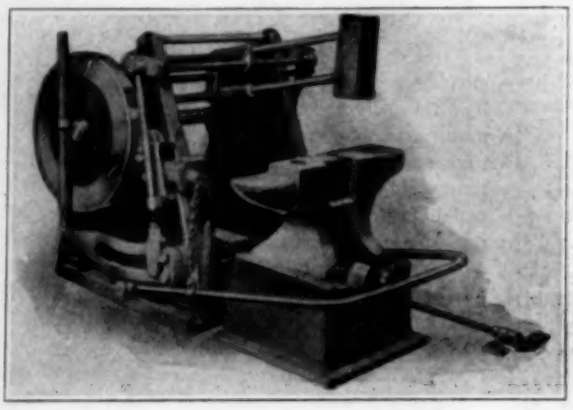


RIVET CUTTER WHICH DELIVERS LIGHT BLOWS IN RAPID SUCCESSION

Power Hammer Replaces Forging Helpers

A general smithing hammer designed to operate on an ordinary anvil has been introduced recently in this country by the Blacker Engineering Co., Grand Central Terminal, New York. It is claimed that the machine allows the smith, working alone, to do the same work as he would with the aid of two strikers. No special tools or dies are required in the operation of this machine.

The general construction of the hammer is shown in the accompanying illustration. The lateral transverse motion enables the head to be traveled along the face of the anvil to any point. This makes it possible to bring the hammer directly over the holes in preparation for swaging, punching, heading and other similar work. The motion is controlled by a winged foot lever conveniently located to the right of the anvil, and can be operated without stopping the hammer. The hammer is easily controlled by the operator. The weight of the blow varies according to the amount of depression of the foot treadle which extends around the anvil. The usual distance between the face of the head and the anvil is 8½ inches. The machine is furnished with either pulley of direct drive. The tight and loose pulleys are 15 inches in diameter with a face of 2¼ inches. The hammer requires only one horsepower to drive. The weight of the hammer alone is 1300 pounds and of the stand 336 pounds.



SMITHING HAMMER WHICH WORKS ON AN ORDINARY ANVIL

Builds New Flexible Shaft for Light Work

A new flexible shaft outfit, which can be used for die work, grinding, and similar light work has been designed by the Machinery Dealers, Inc., formerly the Standard Machinery Co., 453 Chapel street, New Haven, Conn. A view of the outfit showing the driving motor and the flexible shafting is shown in the accompanying illustration. Several features incorporated in the design of this outfit include the built-in fan for cooling the motor, a special case which makes it easy to carry the outfit from the shop to any outside work or to move it about the shop. The outfit is made complete with a ball bearing hand piece, sheathe, shaft and the 1/6 horsepower driving motor.

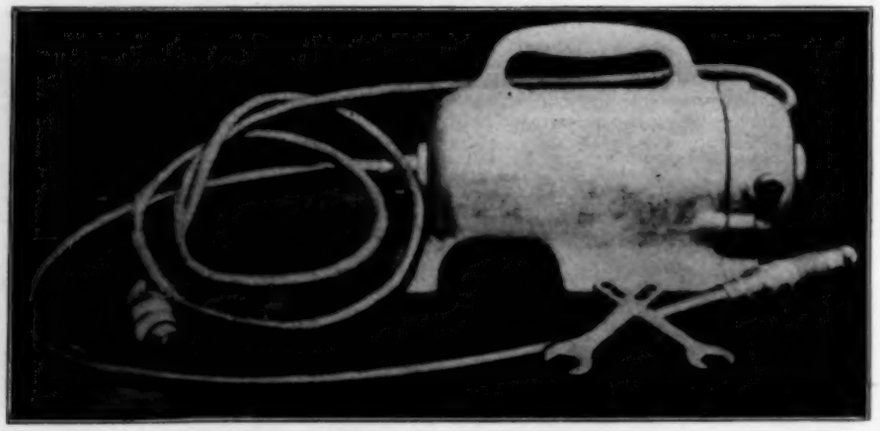
Safety Codes Provide No Legal Penalties

Clauses relating to legal penalties or to methods of enforcement will not be included in the safety codes approved by the American Engineering Standards committee, 29 West Thirty-ninth street, New York, according to a policy established at a recent meeting of the committee in New York.

This action was taken on the suggestion of the safety code correlating committee which acts in an advisory capacity in matters concerning safety codes. It was the feeling of those engaged in the furtherance of standardization in industry and of practically all state officials that legal penalties for failure to conform with established state safety codes and methods of enforcement could best be decided by each state for itself.

Rivet Cutter Designed for Rapid Work

New type of rivet cutter designed on the principle that in cutting rivets, a number of comparatively light blows delivered in rapid succession will cause more vibration and more distortion of steel plates than a few intermittent, heavy blows, has been introduced recently by the Chicago Pneumatic Tool Co., New York. A view of the new device is shown in the accompanying illustration. The tool is made up of a dead handle, a throttle handle of the crank design, a throttle valve of the taper type, a back head screwed into the cylinder and secured by a locking device, a cushion chamber in the rear end of the cylinder, a cylinder of seamless steel tubing, a by-pass from the back to the front head, a nonremovable electrically welded front head, square coiled spring buffer, adjustable chisel lock, hand hold of the square handle type, and the chisel. To operate, the throttle handle is moved in a line parallel with the cylinder. Each stroke of the piston is hand controlled.



FLEXIBLE SHAFT OUTFIT DESIGNED FOR GRINDING AND DIE WORK

Favor Uniform Marking System

Representatives of Steel Companies Adopt Resolutions Recommending Marking Standards—Authorize Appointment of Working Committee—Report Read on Progress Made in Standardization of Marking in Foreign Countries

Washington, Dec. 12.—Appointment of a sectional committee by the American Engineering Standards committee to devise a system for numbering steels was authorized at a conference of representatives of steel producers, steel consumers and technical associations here last Wednesday. Resolutions were adopted to the effect that it is desirable to have a uniform numbering system for forging steels, casting steels, structural steels including plates, tool steels and miscellaneous steels. The personnel of the sectional committee will be recommended by the Society of Automotive Engineers and the American Society for Testing Materials. The committee will function under the guidance of these two bodies.

Prompting the proposal to number steels was the idea of simplifying ordering. Much discussion was provoked on the subject of basing classifications on chemical composition, physical properties or heat treatment. The resolutions adopted were phrased as follows: "It is the sense of this meeting that it is desirable to have a uniform numbering system for * * * * steels provided such a system is based upon definite specifications." This left it to the discretion of the sectional committee whether to base the proposed systems upon chemical composition, physical properties, heat treatment, or any two of them or all of them.

Oppose Numbering Tool Steels

J. H. Parker, Carpenter Steel Co., Reading, Pa., vigorously opposed the inclusion of tool steels in any program of numbering, claiming the tool steel range too wide to be covered by any system. Mr. Parker quoted Dr. J. A. Mathews, Crucible Steel Co. of America, New York, who was unable to attend, as being opposed to numbering and declaring it to be a retrograde step. Robert Bird, Bethlehem Steel Co., Bethlehem, Pa., warned that success could not be looked for if a numbering system were based on anything but chemical composition. C. F. W. Rys, Carnegie Steel Co., Pittsburgh, said standardization of specifications must precede the formulation of any symbols.

A general note of warning was sounded that whatever system is finally adopted, it must not be too rigid and must not prove a barrier to the development of better grades of steel. When some criticism was directed toward the army and navy for their differing specifications Dr. G. K. Burgess, chief of the metallurgical division of the bureau of standards and chairman of the metals section of the federal specifications board, said that the board would shortly announce joint specifications for the two government branches. He promised that the army and navy specification for the same metal for the same purpose will be identical. Doctor Burgess, incidentally, presided at the conference, which was called at the direction of the American Engineering Standards committee. The systems of the Society of Automotive Engineers and the American Society for Testing Materials were both highly praised.

A feature of the conference was the presentation of a resume of European practice by Lawford H. Fry, Standard Steel Works Co., Philadelphia, representing the American Society for Testing Materials. The material for the resume was obtained by Dr. P. G. Agnew, secretary of the American Engineering Standards committee, New York, through questionnaires. Replies were received from standardizing bodies in France, Germany, Great Britain, the Netherlands, Sweden, Belgium, Switzerland, and Austria. Incidentally, Mr. Fry said only France, Germany and Switzerland can teach the United States anything on this subject, and his leaning was toward the French system. Mr. Fry's paper follows:

"In asking for the preparation of this report the American Engineering Standards Committee said that it should merely indicate briefly the nature of foreign utilization of numbering systems for steels. So far as information is available, France, Switzerland and Germany are the only countries in which any definite step has been taken so far. Germany has started a rudimentary system, Switzerland has just published a tentative system of symbols which is intended to be universal and definite, while France has a system by which steels are referred to certain definite specifications. The information received from the important countries is summarized below:

"The British Engineering Standards association under date of Oct. 11 reports that the matter of numbering steels is in a state of flux. During the war the association adopted the symbols of the air ministry and is maintaining these for air craft steels. There is apparently a strong desire to adopt some other form of symbol for automobile steels.

Swiss System Explained

"The standards committee of the Swiss Association of Engine Builders (Societe Suisse des Constructeurs de Machines or Verein Schweizerischer Maschinenindustrielle) has just issued a series of tentative standard sheets covering carbon nickel, chrome and nickel steels. The principle is to show the content of the carbon and of the principal alloys by using the standard chemical symbol of the elements in question, and adding to each a figure showing the mean percentage of the element. Thus a carbon steel with 0.25 to 0.35 per cent carbon has as its symbol C 2n. The "C" shows carbon, the amount being given by the "2" which indicates a mean content of 0.2 per cent. The suffix "n" shows a maximum allowable content of 0.07 per cent phosphorus and 0.06 per cent sulphur. If the steel is given the symbol C 2 s the maximum allowable is 0.04 per cent phosphorus and 0.03 per cent sulphur. If the symbol is written C 2 without suffix neither phosphorus or sulphur may exceed 0.02 per cent.

For a chrome nickel steel with 0.25 to 0.40 per cent carbon, 2.5 per cent minimum nickel and 0.60 to 0.90 per cent chromium the symbol is 3-Ni-30-Cr8. In the alloy steels the "C" for carbon is omitted but the first figure "3" shows a mean carbon content of 0.3 per cent. Following the chemical composition symbols a note is added showing whether the steel is to be annealed, or treated and in the latter case the minimum tensile strength is given. If not noted to be annealed or treated, the natural condition is assumed, hot rolled, forged, etc. Thus the complete designation of the above nickel chrome steel would be 3 - Ni30 - Cr 8 verguetet (treated) to 80. This indicates the steel is to be treated to give a minimum tensile strength of 80 kilograms per square millimeter. The standard sheets show the yield point, elongation, and notch toughness corresponding to this tensile strength, and these may if desired be added to the symbol in ordering. The system is stated to be capable of indefinite expansion and yet to indicate definitely the steel desired. It appears that in practical work much confusion will occur unless the symbols are used in direct connection with the standard sheets.

"The German Industrial Standards committee (Normenausschuss der Dutschen Industrie) has issued a tentative

standard DIN, E1526, Aug. 12, 1922, covering steels without alloys and untreated. This covers seven grades for which tensile strength and elongation in the annealed condition are specified. The grades are designated by arbitrary numbers with the prefix St. (Stahl). The properties of the grades follow:

	Tensile strength kilograms per square millimeter	Elongation in 100 millimeters per cent
St. 0		not specified
St. –	34-44	25
St. 1	34-42	30
St. 2	42-50	24
St. 3	50-60	22
St. 4	60-70	17
St. 5	70-80	12

"Work on other steels is under way but the direction which it will take is not yet determined. It will possibly be desirable to classify carbon and alloy steels separately so that a basic number related to the carbon content can be carried through while the alloy steels receive a distinguishing mark. No general agreement on this is yet in sight.

"The Permanent Commission for Standardization (Commission Permanente de Standardization) is issuing a series of standard French specifications for various materials (Cahiers de Charge Unifies Francais). The series of specifications for carbon steel bars, blooms, billets and slabs, adopts a system of marking the various grades and classes of steel which deserves attention. The specifications are issued under date of June 4, 1920, on five classes of steel. No chemical composition is given but in each specification the steel is divided into grades according to the minimum tensile strength. The numbers of the specifications, the class of material and the grades are shown below:

A_F—1—UF. Ordinary stock material.
Grades by minimum tensile strength of an annealed bar. 35, 40, 48, 55, 70 kilograms per square millimeter.

A_F—2—UF. Material furnished in heat treated condition.
Grades by minimum tensile strength of bar from material as furnished. 35, 40, 48, 55, 70, 80, 90, 100 kilograms per square millimeter.

A_F—3—UF. Material to be heat treated after delivery.
Grades by minimum tensile strength from heat treated bar. 60, 70, 80, 90, 100, 115 kilograms per square millimeter.

A_F—4—UF. Low carbon steel for carburizing.
One grade only no tensile.

A_F—5—UF. Low carbon mild steel.
Grades by minimum tensile strength of annealed test specimens. 35, 38 kilograms per square millimeter.

The steels meeting these five specifications are to be marked to indicate the material as follows:

1. Number of the specification as given above.

2. Letter indicating the method of manufacture
M-Acid open hearth (Martin).
C-Crucible.
E-Electric.
B-Bessemer acid.
T-Basic open hearth (Thomas).

3. The number showing the minimum tensile strength specified.

"The commission points out that this system of marking gives a compact symbol which by referring to a definite specification leaves room for no ambiguity. It also takes account of the principle laid down by the consulting committee of manufacturers, which recommended that designations of material should be given in full and not in code.

"If your reporter is permitted to comment on the various systems described, he would point out that only two, the French and the Swiss, offer anything which might serve as a basis for progress in this country. These two systems follow opposite lines of thought. The Swiss attempts to construct a flexible logical system which can be added to at will to cover any existing steel and to include new steels as they are developed. The French system refers to definite grades of steel covered by complete specifications, and accepts the principle laid down by the French engineers of avoiding a code system of numbering steels.

"It appears that the Swiss system shows that a code designation of steels is open to serious objections unless it is used in close connection with a series of standard specifications. This is the French method. In the Swiss system, if a symbol standing alone is to be interpreted, misunderstandings may occur. For example since the average carbon content is rounded off to the nearest 0.1 per cent, the symbol C 4 may indicate a carbon steel with a carbon range from 0.30 to 0.40 per cent, mean 0.35 per cent or with a range from 0.39 to 0.49 per cent mean 0.44 per cent. Further, in the steels now listed the range of manganese content varies with the carbon without any indication of this being given in the symbol.

"The French Standards commission following the advice of the committee of the arts and manufacture consulting with them, accepted the principle that symbols in code should not be used. They have therefore arranged their system to designate beyond question a definite grade of steel covered by a complete specification. It appears that this principle is sound. A code which is designed to be extensible must lead to ambiguities as it is drawn out to cover new steels. A symbol referring to a definite grade of steel in a definite specification leaves no room for doubt as to the composition and condition of the steel. As an example of what can be done in this way in American practice a steel can be specified as A.S.T.M.A-18-21-G. This provides a symbol that can be used conveniently on a drawing or elsewhere and yet determines beyond question that the steel is to be quenched and tempered carbon forging steel treated in accordance with the A.S.T.M. Specification A-18-21 and giving certain definite physical properties according to the size of the forging as required by the class letter "G" in this specification."

To Build Purifying Plant

Announcement has just been made that the Koppers Co., Pittsburgh, has been awarded a contract for the erection of a 12,000,000 cubic feet liquid purification plant at the Midland, Pa., plant of the Pittsburgh Crucible Steel Co. This, it is said, will be the first liquid purification plant to be built in connection with a steel mill for the purpose of purifying coke oven gas for use in open-hearth furnaces. It is expected that the plant will be put in operation by March 1.

Oven Loss

In Beehive Coke Field 9284 in Year—1921 Production 5,538,042 Tons

Beehive coke production in the United States in 1921 amounted to 5,538,042 tons, according to final and complete figures by the geological survey. Not since 1885 has the beehive output been so small. The 1921 tonnage practically substantiates the government estimate of 5,561,000 tons reported last March. It is 73 per cent less than the beehive tonnage produced in 1920.

Production in both beehive and the by-product ovens totaled 25,287,622 tons. The government report on by-product performance, showing a total of 19,749,580 tons in 1921, was published in IRON TRADE REVIEW Nov. 9. Of the total, beehive ovens contributed only 22 per cent as against 40 per cent in 1920.

An outstanding feature of the 1921 report is that the number of beehive ovens in existence Dec. 31 last year was only 66,014. A year earlier the total was 75,298. This loss, 9284 ovens, is the greatest ever reported in any one year.

Beehive output and ovens for 12 years have been as follows:

Year	Net tons	Ovens
1921	5,538,042	66,014
1920	20,511,000	75,298
1919	19,650,000	82,560
1918	30,481,000	84,635
1917	33,167,548	88,027
1916	35,464,224	91,581
1915	27,508,255	93,110
1914	23,335,971	93,946
1913	33,584,830	96,962
1912	32,868,435	97,019
1911	27,703,644	99,255
1910	34,570,076	100,362

Of the beehive coke produced last year, 4,969,052 tons was for furnace and foundry uses. Coke producers used 495,481 for their own purposes and the rest went into domestic consumption. In the production of beehive coke, 8,475,446 tons of coal was used. The yield of coke was 65.3 per cent. Sales of furnace and foundry coke averaged $5.42 per ton and of domestic coke $4.79 per ton. Coal charged and coke produced by states last year were as follows:

State	Coal charged	Coke produced
Alabama	223,119	132,912
Colorado	123,828	81,376
Georgia	12,708	6,943
Kentucky	161,507	99,442
Ohio	99,787	62,150
Pennsylvania	6,722,491	4,466,105
Tennessee	54,328	28,005
Virginia	442,038	280,476
Washington	6,291	3,495
West Virginia	343,226	209,537
New Mexico and Utah	286,123	167,601
Total	8,475,446	5,538,042

Ingot Production

With 2,889,297 Tons in November Shows Small Increase

Production of steel ingots in November totaled 2,889,297 gross tons, according to statistics compiled by the American Iron and Steel institute from production figures reported by 30 companies which in 1921 made 87.5 per cent of the total for the country. Compared with the 2,872,415 tons in October, the November output is a gain of 16,882 tons. This increase compares with an increase of 498,636 tons in October over September. Ingot production during November was the highest of any month since September, 1920, when the output was 3,015,982 tons.

Following are the institute's production figures for all of 1921 and the first 11 months of 1922.

1921	Open hearth	Bessemer	All other	Total
Jan....	1,591,281	608,276	3,629	2,203,186
Feb....	1,295,863	450,818	2,796	1,749,477
March..	1,175,591	392,983	2,404	1,570,978
April...	1,000,053	211,755	2,150	1,213,958
May....	1,047,810	216,497	1,543	1,265,850
June....	808,286	193,644	1,476	1,003,406
July....	689,489	113,312	575	803,376
Aug....	915,334	221,116	1,621	1,138,071
Sept...	908,381	265,152	1,207	1,174,740
Oct....	1,269,945	345,837	1,028	1,616,810
Nov...	1,294,371	363,912	1,718	1,660,001
Total for 11 mo..	11,996,404	3,383,302	20,147	15,399,853
Dec...	1,129,174	296,380	1,539	1,427,093
Total for year.	13,125,578	3,679,682	21,686	16,826,946
1922				
Jan....	1,260,809	331,851	822	1,593,482
Feb...	1,395,835	348,571	616	1,745,022
March..	1,918,570	451,386	795	2,370,751
April...	1,997,465	445,939	1,109	2,444,513
May...	2,214,774	494,893	1,474	2,711,141
June...	2,143,708	487,851	2,918	2,634,477
July ..	2,020,572	464,047	2,485	2,487,104
Aug. ..	1,807,310	404,379	2,893	2,214,582
Sept...	1,911,147	460,127	2,505	2,373,779
Oct. ..	2,352,207	518,010	2,198	2,872,415
Nov. ..	2,360,903	525,945	2,449	2,889,297
Total for 11 mo..	21,383,300	4,932,999	20,264	26,336,563

On an average daily basis the production of the 30 companies during November was 111,126 tons, a gain of 649 tons over the October output of 110,477 tons. Upon this basis and the factor of 87.5 supplied by the institute the average daily rate of production for the whole country was 127,001 tons in November, as compared with 126,259 tons in October, a gain of 742 tons.

Calculated upon the average daily production of November and 311 working days per year, the approximate annual rate of production for the 30 companies during the month was about 34,560,000 tons or 200,000 tons better than the indicated rate of October. On the same basis, the approximate annual rate of production for the whole country was about 39,495,000 tons, a gain of 230,000 tons over the indicated rate of 39,265,000 tons during the preceding month. The annual indicated rate of production in November was about 105.5 per cent better than the total ingot production of 1921, and about 90.5 per cent of the record output for all time in 1917.

During the first 11 months of 1922 the 30 companies produced 26,336,563 tons as compared with 15,399,853 tons during the corresponding period of 1921, the increase being 10,936,710 tons or 71 per cent. Again using the factor of 87.5 the production for the entire country during the first 11 months of the year was approximately 30,000,000 tons. During the whole year 1921 the total production of steel ingots was only 19,184,084 tons.

Strike Impairs Credit

At the recent hearing in the petition for a receivership in the American Manganese Mfg. Co., the common pleas court in Philadelphia appointed David Halstead receiver. The receivership action was taken on the petition of Edward E. Marshall, who holds more than $100,000 of stock and who is a creditor to the extent of more than $100,000. Lack of ready capital and impairment of credit due to the coal strike were given as causes for the appeal to the court. The company acquiesced in the appointment of the receiver. The company, which is a $12,000,000 corporation, was stated to have liabilities exceeding $500,000 on merchandise and of more than $2,000,000 on notes. It was said that in addition, four mortgages covering a large bond issue, are in default. The American Manganese Mfg. Co. has headquarters in the Bullitt building, Philadelphia, and has two furnaces, coal mines, etc., at Dunbar, Pa.

News of Societies

Past and Coming Meetings of National and Local Trade and Technical Organizations

AT THE regular monthly meeting of the Engineers' Society of Western Pennsylvania held at the William Penn hotel, Tuesday, Dec. 12, T. Y. Olsen, vice president and treasurer of the Tinius Olsen Testing Machine Co., Philadelphia, read a paper on "Developments in Methods and Apparatus for Testing and Balancing" which was illustrated by lantern slides. Mr. Olsen referred briefly to standard types of testing and balancing appliances, described fully new testing instruments, extensometers and strain gages, hardness testers, etc., as well as various forms of special testing apparatus.

New officers for 1923 have been chosen unanimously by the nominating committee as follows: President, Morris Knowles, president, Morris Knowles, Inc., engineering and architectural practice; vice president, W. B. Spellmire, manager in charge of Pittsburgh office of the General Electric Co.; treasurer, A. Stucki, consulting railroad equipment engineer; and directors, Frank I. Ellis, consulting steelworks engineer, and E. D. Leland, assistant general manager of the Philadelphia Co., all of Pittsburgh.

* * *

Discuss Foundry Problems

The Wisconsin Foundrymen's association held the first of a series of open meetings for all foundrymen of the state at the Hotel Pfister, Milwaukee, Nov. 28. Mr. H. P. Kreulen, Bethlehem Steel Co. was the principal speaker. His talk was followed by a general discussion of the association and foundry problems. Mr. Goldstein, Nash Motors Co., Kenosha, Wis., commented on the work and results obtained in their foundry. The next regular meeting of the association will be held Tuesday, Dec. 19, and will be for members only.

Convention Calendar

Jan. 11-12—American Engineering Council. Annual meeting headquarters F. A. E. S., 24 Jackson place, Washington. L. W. Wallace, 24 Jackson place, Washington, is secretary.

Feb. 14-16—American Institute of Electrical Engineers. Mid-winter convention, New York. F. L. Hutchinson, 29 West Thirty-ninth street, New York, is secretary.

Feb. 19-21—American Institute of Mining and Metallurgical Engineers. Annual meeting in Engineering Societies building, New York. F. F. Sharpless, 29 West Thirty-ninth street, New York, is secretary.

April 3-7—American Chemical society. Spring meeting New Haven, Conn. L. Parsons, P. O. Box 1515, Washington, is secretary.

April 25-27—National Foreign Trade Council. Annual convention in New Orleans. O. K. Davis, 1 Hanover square, New York, is secretary.

April 30-May 3—American Foundrymen's association. Annual convention and exhibition at Public Hall, Cleveland. C. E. Hoyt, 140 South Dearborn street, Chicago, is secretary.

May 3-5—American Electrochemical society, semiannual meeting, Hotel Commodore, New York. Colin G. Fink, 327 South La Salle street, Chicago, is secretary.

Engineers Enter Broader Field

Annual Meeting of American Society of Mechanical Engineers Reveals Interest Manfested in Economics, Management and Human Engineering and Trend of Engineering Thought Toward National and Political Problems

ENGINEERS gradually are extending the scope of their activities. Pure engineering, as exemplified by the conventional handling of problems dealing with stresses, mechanics and other elements of materials and motion, is being combined with a new profession of broader vision, that has to do with the economic and human aspects of industry.

This trend was reflected unmistakably at the sessions of the forty-third annual meeting of the American Society of Mechanical Engineers held at the Engineering Societies building in New York last week. It was emphasized by the liberal attention given to management and to economic problems on the program and was crystallized in the presidential address, when Dean D. S. Kimball, Cornell university, Ithaca, N. Y., referred to the two engineers in governors' chairs and to Herbert Hoover in the president's cabinet as the "vanguard of an invading army" of professional men who will seek political positions in the future.

Management was discussed at a well attended meeting held Tuesday morning and again at an economic conference Wednesday night under the auspices of the society and the American Economic association. Education and training for industry was the subject of an interesting symposium held Tuesday afternoon, while a number of aspects of the safety problem were covered in papers and reports presented at a session on safety engineering Thursday morning. The attendance at all of these meeting was a revelation of the increased interest now being given to the more general phases of engineering.

The technical program consisted of numerous simultaneous sessions devoted principally to materials handling, machine shop design and practice, research, steam tables, fuels, locomotive design, power plant engineering, standardization, aeronautics and ordnance. The fuels session, held by the fuels division of the society and the Stoker Manufacturers' association, proved to be one of the most important meetings of the week. The discussion of four papers on stokers eventually covered many related phases of the combustion problem including sizing of coal, design of boilers and stokers, use of automatic control, and the past and future of stoker development. In point of direct practical value, it seemed that this fuel session, and that on safety engineering excelled all others on the technical program.

No one who attended the meeting could well escape the outward evidences of the important role now being played by committees in the internal work of the society. More than 50 committee meetings were held during the week, the visiting delegates representing the society's 56 local sections which extend from coast to coast. The growth of the committee idea also was reflected in the program, which was made up of sessions arranged by the various professional divisions of the society.

The entertainment features were well handled. The dinner and smoker held Tuesday evening was a decided success as is indicated by the fact that the attendance exceeded expectations by more than 100. Inspection trips were made to various points of interest, the most attractive trips being those to the U. S. S. MARYLAND at the Brooklyn navy yard and to the demonstration of an amphibian gun mount at the Palisades. This mount traveled on rubber tires on a highway at the rate of 30 miles an hour, climbed a 40-degree incline on caterpillar treads, and then crossed the Hudson river under its own power in 44 minutes. A dinner dance was held at the Astor hotel Thursday evening and on Friday evening college reunions were held.

Study Status of Schools for Vocational Training

RECOGNIZING the need of studying the problem of industrial training, the A. S. M. E. committee on education and training for the industries arranged a conference on the subject, which was held Tuesday afternoon. As outlined briefly by the chairman of the committee, W. W. Nichols, assistant to the president, Allis-Chambers Mfg. Co., New York, the purpose of the symposium was to determine the present status of industrial training and to exchange experiences with a view of seeking a standard code of procedure in vocational training.

The symposium, scheduled on the program as a report, embraced three papers. The first, a resume of the work of the principal extension and correspondence schools of the country, was presented by James A. Moyer, director, university extension, Massachusetts department of education, Boston. He lists 30 correspondence and extension schools in which the total enrollment per institution since organization ranges from 189 to 2,700,000 students. The information shown indicates that the pioneers in this field started about 31 years ago and that there has been a rapid increase in the number of schools within the past 10 years. Many of the courses inaugurated in recent years are identified with state universities and are supported by taxation. The cost of the courses to students ranges from a fee of one to 10 dollars in a tax supported institution to a fee of $70 to $220 charged by a privately operated school. A wide discrepancy appears between the total enrollment and the number of students completing courses. In one school 75 per cent of the students received certificates of graduation, but the general average, according to the data shown, is well below 40 per cent.

In a foreword in Mr. Moyers' report, Ira N. Hollis, president, Worcester Polytechnic institute, Worcester, Mass., enumerates the advantages and disadvantages of correspondence schools. "Correspondence instruction," he says, "lacks the contact among students that promotes discussion and supplies stimulus for study, but it makes up for that in the serious purpose of every student and in what must be confessed is superior instruction. A correspondence school can afford to employ the very best talent for preparing the textbooks and can lend to the work a degree of technical skill that one cannot find in the average college."

R. L. Sackett, dean of engineering,

Pennsylvania State College, State College, Pa., presented a paper on schools for apprentices and shop training. He outlined the program of apprentice training recently prepared by an organization of New York architects, builders and trade unions in the building industry; referred to the apprentice and special-apprentice systems employed by the railroads; and described the apprenticeship plans of the Westinghouse Electric & Mfg. Co., and the National Metal Trades association. Dean Sackett also explained the operation of vestibule and shop schools for shop training. In the case of the former, where the students and instructors are divorced from the production department, an excellent opportunity is afforded for efficient training. However, the expense is sufficient to make it prohibitive except in large plants. In shop schools, where the apprentice is taught in the production department, the foremen usually are the instructors. Here the problem is one of selecting and training foremen so that they can qualify as teachers, and yet be available for production work when not engaged in school work. Dean Sackett also touched on the problem of wages paid during the training period.

"Industrial Education as Represented in Schools" was the subject of a paper presented by C. R. Richards, director, Cooper Union, New York. He traced the development of trade schools, stating that aside from those operated for a profit, there are about 15 in the United States. These institutions labor under severe economic difficulties. Mr. Richards next discussed the evening schools, stating that in New York state alone 27,000 students were enrolled in evening classes under public administration in 1920-21. Admission to these classes involved actual employment in a related trade. He also discussed the status of part time and unit-trade, or vocational, schools. In comparison with Europe, the United States has few secondary technical schools, according to Mr. Richards. He cited Pratt, Ohio Mechanics, Lewis Wentworth and Dunwoody institutes as representative of this type of school in America. Technical high schools, he declared, are attempting to fill the gap caused by the lack of secondary technical universities. Co-operative schools also are filling a need in preparatory training. In conclusion Mr. Richards discussed foreman training and explained the results of the federal vocational education act passed in 1917.

Symposium Develops Timely Discussion on Fuel

ALTHOUGH listed on the program as a symposium on stokers, the session held Wednesday morning under auspices of the fuels division of the society, and the Stoker Manufacturers' association, developed into a discussion of many phases of the combustion of coal under boilers. L. P. Breckenridge, Yale university, New Haven, Conn., presided.

Four papers on stokers formed the basis of the morning's discussion. T. A. Marsh, Green Engineering Co., East Chicago, Ind., presented a paper tracing the development of the modern chain grate. He showed how greater boiler capacity can be obtained by increasing the grate area or by using more intense natural or forced draft. Front and side feed types of inclined overfeed stokers were described in a paper by George I. Bouton, Murphy Iron Works, Detroit, while the design and operation of underfeed stokers was covered in a paper presented by H. F. Lawrence, American Engineering Co., Philadelphia. The operation of each of these types of stokers is explained in detail in these papers, and the results obtained in a number of installations are outlined. A chronological history of stoker development, compiled by A. H. Blackburn, Under-Feed Stoker Co. of America, Detroit, served as an appropriate supplement to the three technical papers.

Early in the ensuing discussion, the subject of automatic control came to the fore. Walter N. Polokov, consulting engineer, New York, expressed some doubt as to the advisability of using automatic control under certain power plant conditions. The human factor was referred to by a representative of a recording instrument manufacturer who declared that, contrary to the opinion held by many, intelligent operators are required to handle automatic equipment. He stated that a man of higher intelligence is required to control combustion through the medium of automatic equipment than through direct firing.

A compromise between automatic and manual control was advocated by several speakers. The operator of a 5000-horsepower plant explained that he had found it impracticable to place all units under either system of control. The best results were obtained, he said, by establishing a battery of boilers under automatic control to handle the ordinary load and to control the remaining boilers by hand in order to handle peak loads. J. B. Crane, George T. Ladd Co., Pittsburgh, subscribed to this plan and explained how a large saving has been effected in a certain plant by placing half of the units under manual and half under automatic control. In the case under discussion, important economies also were made by cutting down damper losses.

Stress Importance of Sizing Coal

Mr. Crane also emphasized the advantage of properly sizing coal for chain grate stokers. Herman C. Heaton, Sargent & Lundy, Chicago, also stressed the importance of sizing and explained the effect of bunker design upon the distribution of coal on the grates. He advocated the swinging spout as a satisfactory device for delivering coal evenly to the fire bed. L. C. Bosler, Midvale Steel & Ordnance Co., Philadelphia, spoke on the sizing of anthracite coal, suggesting that several small sizes such as rice and barley might be combined to the advantage of both producer and user.

At this point an eastern manufacturer called attention to the many kinds of coal now being offered for industrial use. He declared power plant operators have a choice of five types of stokers with which to handle 75 kinds of fuel. He said the ideal situation would be to have one stoker capable of handling any type of coal. Replying to this rather exacting requirement, one speaker stated that the only way 75 varieties of coal can be handled by a single combustion system is to pulverize the fuel.

In the concluding discussion, R. Sanford Riley, Sanford Riley Stoker Co., Worcester, Mass., emphasized the need of intelligent supervision of stoker equipment. Prof. Breckenbridge commented on the early development of stokers, stating his belief that the Coxe-type was developed much earlier than 1893, as listed in Mr. Blackburn's chronology. He also praised the work of the United States bureau of mines on fuel research.

O. P. Hood, United States bureau of mines, Washington, talked briefly on smoke prevention. He deplored the fact that smoke control frequently is under the domination of politics, which prevents efficient and impartial regulation. The work of the bureau, he said, is to determine what kind of an organization is best fitted to handle the smoke problem, to decide what kind of smoke should be permitted and to set a limit on the time

each kind of smoke should be allowed to issue from stacks.

J. J. Nelis, Power Specialty Co., New York, presented a concise statement of the limitations to the use of stokers on marine boilers. Although there are few installations today, he said that the future offers opportunities for the application of stokers to steamships.

Maxwell Alpern, American Engineering Co., on behalf of the Stoker Manufacturers' association, plead for co-operation of all engineers and manufacturers interested in the combustion of fuel and explained how the manufacturers of boilers, refractories and stokers already, have worked in harmony on certain problems.

A session on research, and several devoted to general topics were held during the week. Among the papers of interest to the metal industry was one by W. L. Wotherspoon, International Nickel Co., New York, on the new refineries and rolling mills recently completed at Huntington, W. Va., Mr. Wotherspoon gave a resume of the preliminery survey which was made to determine the estimated cost, location of site, etc. He also described the principle features of the plant, which was briefly covered in the Nov. 2 issue of IRON TRADE REVIEW.

Reviews Accidents To Show Need of Safety Codes

THAT there is direct, practical value in safety engineering was well demonstrated at a session held Thursday morning under the auspices of the American Society of Safety Engineers and the A. S. M. E. committee on safety codes. John W. Upp, General Electric Co., Schenectady, N. Y., presided.

M. G. Lloyd, chief of safety section, United States bureau of standards, Washington, presented a paper on the development of industrial safety codes. He first showed the extent of the waste of human resources through industrial accidents and stated that in 1920 the United States government expended about 1.3 cents per capita for safety work. The state governments contribute about $2,750,000 annually to this work. He next emphasized the value of state inspection and national codes, and outlined the work of the American Engineering Standards committee in correlating safety codes. A safety code correlating committee, representing 14 societies and bureaus now is working to obtain favorable action on about 50 safety codes.

A. D. Risteen, Travelers Insurance Co., Hartford, Conn., presented a paper on "Safety Engineering in the Compression of Gases," which will be published in full in a later issue. The paper deals with the handling of oxygen, nitrogen, argon, carbon dioxide, hydrogen, acetylene, ethyl chloride, methyl chloride, propane, ammonia and chlorine.

Much of the discussion developed around the problem of compressing acetylene. One speaker stated that the speed of the compressor is not a factor as long as the temperature of the gas is kept below 300 degrees Fahr. He described a compressor with thermometers inserted at strategic points to enable the operator to keep a check on the temperature. He stated that a compressor never should be operated unless an attendant is constantly on duty.

M. D. Hersey, United States bureau of mines, Pittsburgh, mentioned the work being performed by the bureau in connection with the influence of oxygen on explosions. Another speaker described an experiment in a closed chamber where doubling the oxygen content seemed to triple the rate of combustion.

At the conclusion of the discussion on this paper, Mr. Lloyd presented a resolution recommending that in connection with safety codes on refrigerating and compressing machines, or other codes, gases other than air be adequately covered. This was unanimously adopted.

One of the most interesting papers of the meeting was that by G. E. Sanford, safety engineer, General Electric Co., Lynn, Mass., on "Safety Code for Grinding Wheels." Mr. Sanford talked extemporaneously, explaining drawings and illustrations projected on the screen. He first showed diagrams indicating the right and wrong ways of mounting grinding wheels. Illustrations were exhibited of a wheel held on the arbor merely by the nut, the operator having purposely left off the flange in order to grind on the side of the wheel. Another wheel was shown supported only by the friction of the metal core on the threaded section of the arbor, there being no collar or washer on either side and no nut. Another "horrible" example, in which an operator had bolted a piece of iron on the side of a wheel to "balance" it, was shown.

Mr. Sanford showed several views of broken wheels that had been safety held by hoods or taper collars. In one case a large wheel operating at 6000 revolutions per minute broke, but the taper collars held every broken section securely. A guard to prevent side grinding was shown. Methods of properly storing wheels also were illustrated.

One of the outstanding features of the convention was the economic conference held Wednesday evening under the auspices of the American Economic association and the management division of the A. S. M. E. M. Herr, president of Westinghouse Electric & Mfg. Co., Pittsburgh, spoke on the subject of the human element in industry. He plead for the substitution of "the rule of reason and intelligence" for force in an effort to restore in America "the freedom of the individual, be he employer or employe."

Prof. W. C. Mitchell, Columbia university, New York, charged that American business men are producing grave national consequences by subordinating the making of goods to the making of money. Among the improvements needed at present, he said, are methods of stabilizing the monetary standard, controlling the business cycle and allowing production to be organized in units large enough to attain maximum industrial efficiency while safeguarding the community against high prices. Ernest F. DuBrul, general manager, National Machine Tool Builders association, Cincinnati, presented a discussion of Mr. Mitchell's address entitled "Making Goods and Making Money." Mr. DuBrul urged that business men take effective steps to bring economics into its proper place, stating that in too many cases manufacturers consider economics as something to be taught in college rather than to be applied to daily business problems.

At the business meeting Wednesday afternoon Calvin W. Rice, secretary of the society declared that through the efforts of the engineering profession a new area is dawning in Pan-America. Mr. Rice gave an interesting report of his experiences in South America where, with Secretary of State Charles E. Hughes and other leading Americans, he attended the Brazilian centennial exhibition at Rio de Janeiro.

The meeting was marked by the change in the presidency of the society, John L. Harrington, Kansas City, succeeding Dexter S. Kimball. During the meeting prizes for papers appearing in the 1920 volume of *Transactions* were awarded to Prof. Robert C. H. Heck, Rutgers university, New Brunswick, N. J., and to R. H. Heilman, Mellon Institute of Industrial Research, University of Pittsburgh, Pittsburgh; and F. L. Kallam, Leland Stanford Jr., university.

Exhibit Power Plant Equipment

More Than 100 Manufacturers Participate in National Exposition of Power and Mechanical Engineering at New York—Measuring and Recording Instruments Reflect Advance in Combustion Control

MORE than a hundred exhibits comprise the first exposition of power and mechanical engineering now in session at the Grand Central palace, New York. The show opened auspiciously Thursday, when many engineers attending the annual meeting of the American Society of Mechanical Engineers inspected the various exhibits. The exposition will remain open until Dec. 13.

Since this is the first time that power plant equipment has been shown exclusively at a national show, there is little opportunity to interpret the displays in the light of recent progress. However, based upon what has been seen in other shows during the past year, notably that held in Cleveland by the Association of Iron and Steel Electrical Engineers, the greatest activity in the power plant field seems to be in the development of apparatus for controling combustion. As was the case at Cleveland, the New York show is dominated by the numerous exhibits of meters, recording instruments, gages and other measuring and control devices. Among the companies displaying this type of equipment are the following: Uehling Instrument Co., Paterson, N. J.; Ashton Valve Co., Boston; Ruggles Klingemann Mfg. Co., Salem, Mass.; Protectometer Co., Jersey City, N. J.; Olsson Corp., New York; C. J. Tagliabue Mfg. Co., Brooklyn; Lewis M. Ellison, Chicago; Foxboro Co., Inc., Foxboro, Mass.; S. C. Regulator Mfg. Co., Fostoria, O.; Stewart-Sayers Co., New York; Schaeffer & Budenberg Mfg. Co., Brooklyn; Republic Flow Meters Co., Chicago; and Bailey Meter Co., Cleveland.

Second in point of number are the exhibits of valves, traps, pipe, pipe bends, fittings, etc. Of unusual interest in this group is the display maintained by the United States Cast Iron Pipe & Foundry Co., Burlington, N. J., including sections of vertically poured and centrifugally cast iron pipe cut longitudinally to show the comparative density of the metal.

Other exhibitors of piping, valves and fittings include the Foster Engineering Co., Newark, N. J.; Paul B. Huyette, Philadelphia; Kieley & Mueller Co., New York; Lead Lined Iron Pipe Co., Wakefield, Mass.; Jenkins Bros., New York; Reading Steel Casting Co., Bridgeport, Conn.; Crane Co., Chicago; Lunkenheimer Co., Cincinnati; Chapman Valve Mfg. Co., Indian Orchard, Mass.; National Pipe Bending Co., New Haven, Conn.; Pittsburgh Valve Foundry & Construction Co., Pittsburgh; Walworth Mfg. Co., Boston; Yarnall-Waring Co., Philadelphia; Julian D'Este Co., Boston; and Manning, Maxwell & Moore, New York. The Scovill Mfg. Co., Waterbury, Conn., exhibited a wide range of brass and copper tubing for power plant use.

Comparatively few boiler manufacturers are represented at the exposition. Models serve to illustrate the principles of boilers built by the D. Connelly Boiler Co., Cleveland; George T. Ladd Co., Pittsburgh; and H. S. B. W.-Cochrane Corp., Philadelphia. Combustion systems were demonstrated or pictured in the booths of the Bethlehem Shipbuilding Corp., New York and the Hagan Corp., Pittsburgh. Stokers were displayed by the International Combustion Engineering Corp., New York; Hand Stoker Co., New York; United Machine & Mfg. Co., Canton, O.; and Sanford Riley Stoker Co., Worcester, Mass.

The importance of refractories was emphasized by a number of attractive exhibits of fire brick, cement and other similar products. Among the manufacturers of refractories represented are Quigley Furnace Specialties Co., New York; American Refractories Co., New York; King Refractories Co., Inc., Buffalo; and Celite Products Co., New York. Boiler settings, arches, and furnace walls were shown by the McLeod & Henry Co., Troy, N. Y.; Liptak Fire Brick Arch Co., Minneapolis; M. H. Detrick Co., Inc., Chicago; Furnace Engineering Co., New York; American Arch Co., New York; Engineer Co., New York; and Bernitz Furnace Appliance Co., Boston.

Superheaters, condensers, economizers and similar adjuncts to boilers are prominently displayed by a number of manufacturers. In several cases this equipment is shown in section to illustrate features of design. Among the exhibits in this group are those of the Wheeler Condenser & Engine Co., Carteret, N. J.; Power Specialty Co., New York; Griscom-Russell Co., New York; C. H. Wheeler Mfg. Co., Philadelphia; and the Superheater Co., New York. Water cooling towers are shown by the Edwin Burham Co., New York; a mechanical cleaner for tubes by the Roto Co., Hartford, Conn.; soot blowers by the Diamond Power Specialty Co., Detroit; and water softening systems by the Graver Corp., East Chicago, Ind.; International Filter Co., Chicago; and Dearborn Chemical Co., Detroit.

The remaining exhibits are largely mechanical in character, including flexible couplings, belting, wood and metal working saws, transmissions, and material handling equipment. A method of supporting shafting is being demonstrated by the Midwest Steel & Supply Co., 28 West Forty-fourth street, New York; gears by the Philadelphia Gear Works, Philadelphia; and transmission systems and clutches by the Hill Clutch Co., Cleveland and the Carlyle-Johnson Machine Co., Manchester, Conn. Smith & Serrell, Newark, N. J., is exhibiting flexible couplings manufactured by the Francke Co., New Brunswick, N. J. Thrust bearings are shown by the Kingsbury Machine Works, Philadelphia. Leather belting is displayed by George Rahmann & Co., New York, while the advantages of this product are illustrated in the booth of the Leather Belting Exchange, Philadelphia.

Several manufacturers, including the Victor Engineering Co. Inc., Philadelphia; R. H. Beaumont Co., Philadelphia; and Gillis & Geoghegan, New York, exhibit coal and ash handling apparatus. The Hudson Coal Co., again is displaying its interesting model of an anthracite mine, with tipple and handling equipment. Trucks are shown by the C. W. Hunt Co., Inc., West New Brighton, N. Y., and the Baker Electric Co., Cleveland.

Machine tools are not in evidence, the nearest approach being a shaping saw demonstrated by the Peerless Machine Co., and a metal hack saw and woodworking band saw shown in operation by the Racine Tool & Machine Co. Both companies are in Racine, Wis. A machine for balancing rotating parts is being exhibited by the Vibration Specialty Co., Philadelphia.

Connery & Co., Philadelphia, is showing a number of examples of steel plate construction braced by means of expanded ribs, which add stiffness. The method is used for flues, uptakes, bunkers, etc. Keasbey & Mattison, Ambler, Pa., is displaying asbestos products in many forms for use in power plant equipment.

Creditors Ask for Sale of Standard Parts Co.

The result of action taken by the creditors' committee of the Standard Parts Co., Cleveland, Receiver Frank A. Scott, will make application to the court soon to offer the plants for sale. The $25,000,000 motor accessory company has been operated under receivership since September, 1920. The company controls five plants, but only four are under direction of the receiver. These are the Standard Welding Co., the Perfection Spring Co., and the Eaton Axle Co., Cleveland, and a spring plant at Pontiac, Mich. The company controls the Bock Bearing Co. of Toledo, but that unit was never placed in receivership. Other plants owned by the company at Cleveland, Canton and Cincinnati have been sold. Originally claims against the company totaled about $11,000,000, but this figure has been reduced to $7,000,000 in addition to interest of $1,000,000. President F. H. Goff, of the Cleveland Trust Co., is chairman of the creditors' committee.

Finance Supply Company

New York banking interests have acquired a large block of the stock of the National Supply Co., Toledo, O., and a public offering of securities will be made soon, it is expected. The company manufactures and sells oil well supplies. According to present plans the company will be reorganized under the laws of the state of Delaware. Under the plan the company will have $8,000,000 authorized 7 per cent preferred stock, of which $7,265,000 will be outstanding and $17,000,000 common stock of which $12,125,000 will be outstanding.

Symington Plant Bought

The land and buildings comprising the Symington gun plant at Seventy-fourth street and Ashland avenue, Chicago, was purchased by a syndicate made up of members of the Harris Bros. Co. and the Chicago House Wrecking Co., at the auction held several days ago. Bids first were taken on the various parcels into which the property had been divided. The total of these bids was $513,000. The first bid for the entire property was $514,000 and the price at which it was sold was $855,000. The plant cost the government close to $3,000,000. The government held the property at a minimum of $750,000.

Bidders for the property included the American Radiator Co., the American Car & Foundry Co., the Baldwin Locomotive Works, the Westinghouse Electric & Mfg. Co. and the Hansell-Elcock Co.

The sale includes 47.4 acres and buildings planned for the production of 3500 shells daily. It was started in operation armistice day 1918 and produced 800 shells before being closed. Since then it has been used as a government warehouse for the storage and sale of machine tools and other surplus equipment.

Form New Axle Company

The plant of the Forest City Machine & Forge Co., Cleveland, has been sold, on the order of Federal Judge D. C. Westenhaver, to Viggo V. Torbensen, president of the new Vig-Tor Axle Co., which will operate the company beginning Jan. 15, 1923. The new company is capitalized at $750,000. The Forest City company's plant was appraised at $700,000. Mr. Torbensen, who was founder of the Torbensen Axle Co., will be assisted in the new enterprise by A. L. Kroesen, formerly of the Timken-Detroit, as vice president and general manager; W. N. Jackson, formerly of Torbensen Axle Co., treasurer; and Carl R. Harrison, vice president of the City & Suburban Realty Co., secretary.

Denies Merger Report

President James A. Campbell of the Youngstown Sheet & Tube Co., has denied his company had negotiations under way with the Inland Steel Co. and the Steel & Tube Co. of America with a merger in view. Mr. Campbell said that operations of the fourth quarter were better than he expected some months ago, when he forecast a 60 per cent operation for this period. The Youngstown Sheet & Tube Co. is now operating at a rate in excess of 85 per cent of capacity. Net earnings of the company for the calendar year of 1922 are estimated at $8,500,000.

Dominion Sells Bonds

A new issue of $4,645,000 Dominion Iron & Steel Co. Ltd. consolidated mortgage 5 per cent bonds was sold last week by Hayden, Stone & Co., New York, at $85 and interest. They fall due Sept. 1, 1939, and are guaranteed by the Dominion Steel Corp. Ltd. They form, in effect, an American series of this issue, others to the amount of $7,694,140 being outstanding and payable in sterling or Canadian currency only. The principal and interest on this new series is payable in gold in New York, or in Canadian currency in Montreal, or sterling in London.

American Rolling Mill Co To Double Capacity

Doubling of the sheet and light plate capacity of the American Rolling Mill Co., Middletown, O., will result from expansion of the company's finishing mills at Ashland, Ky. The Ashland plant will be put in shape to produce about 250,000 tons of light finished producted annually, making the total capacity of the company fully 500,000 tons annually. This will further strengthen the position of American Rolling Mill Co., as the largest independent sheet manufacturer.

The expansion program will cost about $6,000,000 and it calls for refinancing plans, which have been announced. This plan provides for $14,000,000 of new capital, $6,000,000 of which will be for refunding all of the indebtedness of the old Ashland Iron & Mining Co., acquired in Dec. 1921. Of the remainder $6,000,000 will finance the construction work and $2,000,000 will be used as working capital for the enlarged Ashland works. The company's net working capital on Dec. 31, 1921, was $7,929,361.

The new capital will be provided by retirement of the present outstanding 7 per cent preferred stock in the amount of $7,000,000 and the issuance of new preferred stock in the amount of $14,700,000 and by the sale of $7,000,000 new 6 per cent 15-year notes.

After completion of the new financing the capital of the company will be as follows: common stock outstanding, $17,852,550; preferred stock outstanding, $14,700,000, a total of $39,552,550.

To effect this program it will be necessary for stockholders to approve the cancellation of the present $20,000,000 authorized issue of preferred stock and to authorize in its stead new preferred stock to amount of $30,000,000.

The company acquired the Ashland properties through the payment of $1,000,000 of the common stock of the American Rolling Mill Co. and the assumption of an indebtedness of approximately $6,000,000. The property acquired has been valued at $13,000,000.

Navy Building Slumps

Washington, Dec. 12.—Reduced activities of the bureau of construction and repair of the navy department are reflected in the annual report of the chief of that bureau showing that in the fiscal year 1922 material submitted and inspected, other than timber and lumber, aggregated only 48,732 tons, against 281,132 in 1921 and 191,486 in 1920. The percentage of this material rejected in 1922 was 11.81, compared with 27 in 1921 and 18.2 in 1920. The cost of inspection averaged 1.4 cents per ton in 1922, contrasted with 1.1 cents in 1921.

Increased Activity

In Sale and Shipment of Refractories —Quotations on Silica Brisk

Pittsburgh, Nov. 12.—Sales and shipments of refractories are on a higher scale than noted recently. Makers in different directions have accumulated enough business to run at between 65 and 75 per cent capacity for at least two months. The car supply is still spotty, interfering somewhat with steady shipments. Several plants during November shipped more brick than they produced so that reserve stocks of both fire clay and silica brick in the hands of makers were decreased at a time when producers ordinarily seek an increase to supply demands of customers during the winter. Practically all of this business consisted of specifications since but little new construction has developed.

The Otis Steel Co., Cleveland, is about to close on second quality brick for its new installation, involving about 500,000 brick. Orders will probably be placed as needed within the next four or six months. Specifications on regular contracts are fairly heavy for both fire clay and silica brick. Pennsylvania prices on fire clay remain strong although some weakness has developed in Ohio and Kentucky where the No. 1 grade is down $1 and the No. 2 grade, $3 per thousand. Some contracts for first quarter requirements of silica brick recently have been consummated, the list including the Youngstown Sheet & Tube Co., the Weirton Steel Co., the United Alloy Steel Corp., and several others.

For two or three weeks there has been a disposition on the part of silica brick makers to give customers the benefit of lower fuel costs, and silica brick prices have been dropping $1 at a time from the $45 price, until $42 now marks the minimum quotation. Silica brick likewise are down in Chicago to a minimum of $47 although in the Birmingham district the price remains unchanged. Magnesite brick is $2 lower than two weeks ago and now is quotable at $68, seaboard base. Recent buyers include the Donner Steel Co., Buffalo. While some makers of chrome brick have taken business at $49, the general market is considered quotable at $50. What is reported to be the largest single order for chrome brick taken in a period of years, recently was placed by the Cambria Steel Co., involving 200,000 brick covering several months' requirements. Other contracts for first quarter needs involve 40,000 to 50,000 bick, several of which have been closed this past week.

Refractories

FIRE CLAY BRICK

(Per 1000 f.o.b. works)

Pennsylvania, No. 1	$43.00 to 46.00
Pennsylvania, No. 2	38.00 to 41.00
Ohio, No. 1	40.00 to 42.00
Ohio, No 2	36.00 to 38.00
Illinois, No. 1	43.00 to 46.00
Illinois, No. 2	40.00 to 42.00
Kentucky, No. 1	40.00 to 42.00
Kentucky, No. 2	36.00 to 38.00
Missouri, No. 1	38.00
Missouri, high grade	48.00
Maryland, No. 1	45.00 to 48.00
Maryland, No. 2	35.00 to 42.00

SILICA BRICK

Pennsylvania	$42.00 to 44.00
Chicago	47.00 to 49.00
Birmingham	48.00 to 50.00

MAGNESITE BRICK

(Per Net Ton Seaboard Base)

9 x 4½ x 2½	$68.00

CHROME BRICK

(Per Net Ton)

9 x 4½ x 2½	$50.00

No Merger For Roebling

John A. Roebling Sons' Co., Trenton, N. J., has increased its capital stock from $15,000,000 to $34,500,000. Colonel Washington A. Roebling, president of the John A. Roebling Sons' Co., Trenton, N. J., has denied rumors that the company would merge with the Replogle Steel Co. and the Wickwire-Spencer Steel Corp.

"No prospects of a merger," he said. "We are doing a good business and are content with conditions. We have plenty to do and can manage our own affairs." Colonel Roebling said that, especially since 1900, the company has been approached several times with suggestions of mergers. While admitting that the Replogle and the Wickwire concerns had communicated relative to the merger, Colonel Roebling said they had either been communicated with or would be to the effect that the Roebling interests did not wish to sell or merge.

Deficit for Foundries

The annual financial statement of Canadian Iron Foundries Ltd., of Montreal, for the year ending Sept. 30, shows that foundry earnings during the 12 months declined by more than 50 per cent, amounting to only $115,349, as compared with $300,824 during the preceding year. After allowances a total defict of $104,437 as compared with a credit balance of $65,780 the previous year was shown.

Plans Sheet Mill in West

The Columbia Steel Co., Pittsburg, Calif., is to erect a 6-mill sheet mill in the near future. A Pittsburgh, Pa. consulting engineer has been retained. When completed this mill will be the first sheet rolling unit west of St. Louis.

Higher Prices

Quoted on Sulphate of Ammonia— Other Markets Are Steady

New York, Dec. 12.—Prices on sulphate of ammonia are slightly higher, the market now holding around $3.10, works, on domestic business, which continues to come out principally from the South. Export prices, however, are nominally unchanged at $3.55 to $3.60. Export business is virtually negligible.

Steadiness characterizes all other products. Pure benzol is holding at 30 cents, works, in tanks and 35 cents in drums; 90 per cent benzol, 27 cents in tanks and 33 cents in drums. Toluol 30 cents in tanks and 35 cents in drums; solvent naphtha, 27 cents in tanks and 32 cents in drums; commercial xylol, 26 cents in tanks and 34 cents in drums, and pure xylol, 30 cents in tanks and 35 cents in drums.

Production of light oil distillates may now be regarded as normal but with the continued shortage of tank cars, distribution is still causing some embarrassment. Toluol and solvent naphtha are scarce, due to the fact that a large portion of output is still going into 90 per cent benzol.

Naphthalene is being booked in good volume at 6 to 7 cents per pound works, for flakes and 7 to 8 cents for balls. Phenol is holding around 22½ cents, although this figure is largely nominal, sellers are well booked up until the end of the year.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plants in Tank Lots

Pure benzol	$0.30
Toluol	0.30
Solvent naphtha	0.27
Commercial xylol	0.29

Per Pound at Producers' Plants

Phenol (nominal)	$0.22½
Naphthalene, flake	0.06 to 0.07
Naphthalene, balls	0.07 to 0.08

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	$3.10

Contract

Pure benzol	$0.30
Toluol	0.30
Solvent naphtha	0.27
Commercial xylol	0.29

Per Pound at Producers' Plants

Phenol (nominal)	$0.22½
Naphthalene, flake	0.06 to 0.07
Naphthalene, balls	0.07 to 0.08

Per 100 Pounds at Producers' Plants

Sulphate of ammonia (12 months)	$3.10

The Royal Machine & Foundry Co., Oshkosh, Wis., has filed voluntary petition of bankruptcy giving liabilities at $26,321 and assets of $62,770. W. C. Jennerhan is president.

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields

W. L. ALLEN has resigned as vice president and general manager of Laclede Steel Co., St. Louis, to become associated after Jan. 1, with Frank H. Johnson of Chicago, in the sale of Laclede and other steel companies' products. Prior to his connection with the Laclede company, Mr. Allen was president of the Valley Steel Co., East St. Louis, which was taken over by the Laclede company in 1918. After leaving college as a metallurgist, Mr. Allen spent several years in the operating departments of blast furnace, open-hearth and finishing mill plants and was one of the early sales engineers of the armor plate department of Carnegie Steel Co. in the promotion of chrome-vanadium and alloy steels. He later acted as commercial engineer of the R. D. Nuttall Co., Pittsburgh in the development of heat treated gears. His official connection with the Laclede company has brought him into intimate contact with the manufacture, sale, and use of hot and cold-rolled strip steels.

John S. Andrews, for the past five years in the Detroit office of the Sharon Steel Hoop Co., Sharon, Pa., has resigned effective Jan. 1.

Julius H. Petrosky has joined the Colonial Iron Works Co., 881 East Sixty-seventh street, Cleveland, in charge of that company's new engineering department.

M. E. Gomber, for more than 12 years in various capacities with the Bilton Machine & Tool Co., Bridgeport, Conn., has been made works manager.

T. A. Martin effective Dec. 1, became general superintendent of the Farrell-Cheek Foundry Co., Sandusky, O. He has been for many years with the George H. Smith Steel Castings Co., Milwaukee.

T. E. Houghton, assistant manager of the Chevrolet plant of the General Motors Corp. at Flint, Mich., has been appointed general manager of the new Chevrolet branch factory at Janesville, Wis.

William J. P. Moonan, manager of the Cleveland office, and Frederick J. Knoeppel, manager of the Chicago office, have been elected members of the firm of Scovell, Wellington & Co., New York, accountants and engineers.

L. D. Tracy has been appointed superintendent of the central experiment station of the bureau of mines at Urbana, Ill. He joined the bureau staff at Pittsburgh in 1918 and since has served as

W. L. ALLEN

coal mining engineer. He succeeds J. J. Rutledge, resigned, at Urbana.

Colton D. Noble, formerly sales manager of the North & Judd Mfg. Co., New Britain, Conn., is to return to the company after an absence of four years during which he represented the M. S. Brooks Co., Deep River, Conn.

Charles Gross, for the past 21 years connected with the sales forces of the Rogers, Brown & Co. at St. Louis, will on Jan. 1 join the sales staff of the St. Louis Coke & Chemical Co. Mr. Gross in his new position will handle pig iron, in which he has specialized.

George U. Hatch, for the last three years sales manager of the Millers Falls Co., Millers Falls, Mass., has been elected vice president of the company. He will continue to have charge of sales. He was formerly sales manager for the Winchester Repeating Arms Co., New Haven, Conn.

R. M. Gunzel has been placed in charge of the direct branch office opened at 306 Crocker street, Los Angeles, by Warren Webster & Co., Camden, N. J., heating apparatus and systems. Paul W. Beggs is in charge of the San Francisco office, 171 Second street, which also has been made a direct branch.

Benjamin F. Palmer, vice president of the H. & H. Foundry & Machine Co., George S. Watts, president and treasurer of the Mianus Motor Works, and Maxwell C. Maxwell, general superintendent of the Yale & Towne Mfg. Co., all of Stanford, Conn., are among the incorporators of the new People's Trust Co. of that city.

T. J. Mullin, formerly in charge of the Denver office of the Petroleum Iron Works Co., Sharon, Pa., has been transferred to St. Louis following discontinuance of the Denver office. His headquarters are in the Central National Bank building, St. Louis. H. S. Dilcher has been made manager of new western territory offices opened at 407 Oil Exchange building, Casper, Wyo.

Frank L. Estep of Perin & Marshall, consulting engineers, New York, has arrived in India to supervise the construction of the works of the Tinplate Co. of India, Ltd., at Jamshedpur. This company is affiliated with the Tata Iron & Steel Co., Ltd. Mr. Estep is accompanied by John Leyshon and David Samson both of whom are from the Gary works of the Indiana Steel Co. They expect to become permanent officials of the new tin plate works when it starts operating. Mr. Leyshon will be works manager and Mr. Samson hot mill superintendent. Mr. Estep expects to return to New York when his work is finished.

Grant Hubley, vice president in charge of sales of the Oil Well Supply Co., Pittsburgh and Oil City, Pa., has been promoted to vice president and general manager to succeed the late Louis C. Sands. D. J. Brown, treasurer, succeeds Mr. Hubley as vice president in charge of sales; S. Clarke Reed, secretary, elected vice president in charge of branch stores; H. C. Burns, credit manager, succeeds Mr.

Brown as treasurer, and J. F. Hunter succeeds Mr. Reed as secretary. Thomas Fleming Jr. is vice president in charge of production and H. A. Boschert is assistant treasurer.

R. J. Rudd, formerly associated with the American Hoist & Derrick Co., St. Paul, Minn., and prior to that with the T. H. Letson Co., 50 Church street, New York City, dealer in machinery, has taken a position as salesman with Philip T. King, 30 Church street, New York, dealer in locomotive cranes.

E. P. Merrill has been appointed general manager of steel sales of the British Empire Steel Corp., Ltd., with headquarters in Montreal. He will have charge of all steel sales of the corporation and its constituent companies, Dominion Iron & Steel Co., Ltd., Nova Scotia Steel & Coal Co., Ltd., Eastern Car Co., Ltd., and James Pender & Co., Ltd.

Charles A. Templeton, Waterbury, governor-elect of Connecticut has appointed six prominent manufacturers in that state as members of his personal staff. The appointees are: Chief of ordnance with rank of colonel, John H. Trumbull, president of the Trumbull Electric Mfg. Co., Plainville; aide-de-camp with rank of major, John M. Burrall, secretary and general manager of the American Ring Co., Waterbury; C. G. Hoerle, secretary of the Union Hardware Co., Torrington; Clifford F. Hollister, treasurer of the American Brass Co., Waterbury; Emil Mannweiler, secretary and manager of the Eastern Malleable Iron Co., Naugatuck; and naval aide, Lieut. Com. Mark L. Sperry Jr., assistant to the superintendent of the Scovill Mfg. Co.

C. G. Taylor has been appointed director of purchases of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. He will have general supervision of the purchasing activities of all plants, comprising the electrical group. Mr. Taylor became connected with the Westinghouse company in 1887, and after working in various departments was transferred to the purchasing agent's office. He was made assistant purchasing agent in 1895, and in 1917, purchasing agent, which position he held until his recent promotion. C. G. Bunnell has been appointed purchasing agent of the East Pittsburgh works to succeed Mr. Taylor. Mr. Bunnell entered the employ of the Westinghouse company in 1905.

Stockholders of the American Screw Co., Providence, R. I., have ratified the recommendation of the directors to increase the capital stock from $3,000,000 to $4,500,000 by the declaration of a 50 per cent stock dividend.

Obituaries

WILLIAM B. Dean, associated with James J. Hill in the development of the Great Northern railroad and other business enterprises and one of the partners of Nicols, Dean & Gregg, St. Paul, dealers in iron, steel and heavy hardware, died Dec. 5. He was 84 years old and death was due largely to infirmities of age. He was retired from active interest in the firm of Nicols, Dean & Gregg into which he entered as a partner with John Nicols in 1860. Later Jesse A. Gregg was admitted to the partnership. Mr. Dean was a member of the executive committee of the Great Northern and for 22 years one of its directors. He was interested in the First National bank, several insurance companies and had been active in the political and civic life of his community and state. Mr. Dean was born in Pittsburgh, Sept. 26, 1838. He was educated in the schools there and in Bolmar's academy at Westchester, Pa. In 1856 he went to St. Paul and entered the employ of Nicols & Berkey and four years later succeeded to the firm which was reorganized as Nicols & Dean.

Henry L. Kinsley, for more than 15 years New England manager of the Warner & Swasey Co., Cleveland, died recently in a Natick, Mass., hospital, aged 68 years. Practically all his business life was spent in the machine tool industry.

Solon Wilder, president of the Central Oil & Gas Stove Co., Gardner, Mass., died at his home in that city, Dec. 5, aged 39 years. He had been connected with the company since 1905 and in 1908 succeeded his father, the late Congressman William H. Wilder, as president.

Edward L. Hutchinson, manager of the plate department of the Moltrup Steel Products Co., Beaver Falls, Pa., died in his home in that city Dec. 4. He was born in Pittsburgh and had lived there for 45 years. He was also secretary of the Ingram-Richardson Mfg. Co., Beaver Falls, and was vice president of the Home Protective Building & Loan association of New Brighton, Pa.

Charles E. Morris, 71 years old, president of the C. E. Morris Co. Iron Works, Columbus, O., died Dec. 9 at his home in Columbus. He was born in Pulaski, N. Y., and went to Columbus in 1882. His first business connection was as a member of the firm of Terrel & Morris, architects. Five years later he organized the iron works company. Two sons, Willard and Lloyd, have been associated with Mr. Morris in the business.

Norman Spang, formerly of Pittsburgh and New York, died in Paris Dec. 2, aged 80 years. Mr. Spang lived in France for the last 20 years. He was a son of Charles F. Spang, founder of Spang, Chalfant & Co., which has had mills at Etna, near Pittsburgh, for more than 75 years. Mr. Spang was an engineer and his famous collection of minerals was placed by his family in the Carnegie museum in Pittsburgh at the time he left this country to make his home abroad. Although residing in France, Mr. Spang retained his American citizenship.

Frederick Metcalf, vice president of the Madison Foundry Co. and treasurer of the Chase Machine Co., both of Cleveland, died Dec. 8 after a three weeks illness. He was 56 years old and a native of Providence, R. I. He went to Cleveland in 1898. He was a graduate of the Massachusetts Institute of Technology and from 1895 to 1898 was treasurer of the American Ship Windlass Co., Providence. Mr. Metcalf was a member of the Society of Naval Architects and Marine Engineers, the Cleveland Engineering society, the Cleveland Industrial society and other organizations.

W. B. Everest, general traffic manager of the Westinghouse Electric & Mfg. Co., East Pittsburgh, died Dec. 5 at his home in Pittsburgh from pneumonia. Mr. Everest was born July 3, 1868, at Newark, N. J. After completing his high school education he entered the employ of the United States Electric Co., Newark, which was later merged with the Westinghouse company. While at the Newark works, he was chief clerk to the general superintendent of the works. In May, 1884, he was transferred to the East Pittsburgh works, retaining his position of chief clerk. In 1895 he was transferred to the auditing department, in charge of cost, and was later appointed storekeeper and shipper, and then traffic manager of the works. In 1914 he was made general traffic manager.

The Minnesota By-Products Co., St. Paul, has filed a mortgage for $425,000 in favor of the Pittsburgh By-Products Coke Co. Certain coal piles are security.

Harding Opposes 12-Hour Day

President Rejoices To Note Conclusions of Federated American Engineers Agree with His, "Reached From a Purely Social Viewpoint"—Says Type of Worker Produced Has Outlived His Usefulness

NEW YORK, Dec. 12.—The 12-hour day and the type of worker it produces have outlived their usefulness in American life, President Harding declares in commenting on the report of the committee on work periods in continuous industry of the Federated American Engineering societies.

This committee after two years of investigation of more than 40 continuous industries, including steel and iron, found that the 12-hour day was not an economic necessity. These findings, President Harding says, represent his "social viewpoint."

The President's statement will be embodied in the report, now being compiled by the engineers. It was given out in New York by the chairman of the committee, Dr. H. E. Howe, of the National Research council, Washington, and is as follows:

"It is a matter of very much gratification to me that the Federated American Engineering societies, our foremost organization of American industrial skill, should have given two years of diligent inquiry, under competent experts, to a subject which is of very deep interest to me, and important to the country.

"I rejoice to note the conclusions of this great body of experts are identical with those which I have reached from a purely social viewpoint. It has seemed to me a long time that the 12-hour day and the type of worker it produces have outlived their usefulness and their part in American life in the interests of good citizenship, of good business and of economic stability. The old order of the 12-hour day must give way to a better and wiser form of organization of the productive forces of the nation, so that proper family life and citizenship may be enjoyed suitably by all of our people.

"This clear and convincing report of the engineers must prove exceedingly helpful in showing that this much to be desired result can be achieved without either economic or financial disturbance to the progress of American industry."

In effect, the engineers found that the tendency throughout the world was in favor of the 8-hour day; that the longer work day was socially unwise and not economically necessary; that more leisure for the nation's workers does not diminish their spirit of service or their efficiency, but rather it tends to promote; that the weight of evidence in industrial plants which have changed from the 12-hour shift to the 8-hour shift is in favor of the shorter work day.

"There is a natural divergence of opinion as to the advantages and disadvantages of the three-shift operation, but the weight of the evidence and the most positive statements are in favor of three shift operation," said the report. "The evidence is conclusive that the extra leisure time of the men under the shorter working day is used to good advantage."

Members of the committee on work periods, in addition to Chairman Howe, were J. Parke Channing, L. P. Alford, Fred J. Miller and Dwight T. Farnham of New York; Morris L. Cooke, of Philadelphia, and L. W. Wallace, of Washington. The field work was directed by Horace B. Drury of Washington, former member of the faculty of Ohio State university, and Bradley Stoughton, of New York, chairman of the iron and steel committee of the American Institute of Mining and Metallurgical Engineers.

President Harding's declaration follows that of John D. Rockefeller, Jr., who in a recent statement favored the 8-hour day.

Immigration Conference Called for Dec. 15

An important conference on immigration has been called by the National Conference of State Manufacturers' Associations, commencing at 10 o'clock, Friday morning, Dec. 15, Congress hotel, Chicago. Members of state associations, and representatives of all agricultural, manufacturing, mining, transportation and commercial organizations are asked to assemble for the purpose of taking action in reference to amending the restrictive provisions of the law. Prompt action is considered necessary to obtain a response on the part of congress. William Butterworth, Deere & Co., Moline, Ill., is president of the conference of state associations.

Money Needed To Push Herrin Case

Chicago, Dec. 12.—Prosecution of the miners accused of the murder of non-union miners at Herrin, Ill., last June seems to be settling down to a matter of money. Through the political situation existing between Governor Small and Attorney General Edward J. Brundage, the latter has not had sufficient state funds to carry on the prosecution and $25,000 has been raised by the Illinois Chamber of Commerce to aid the attorney general. This is inadequate, especially as the 7 per cent special assessment on union miners will yield about $125,000 per month for the defense.

To make it possible for the state to be properly supported in the prosecution the Illinois legislature will be asked at its January session to make a special emergency appropriation for the attorney general's department. Considerable politics will be involved in the effort to get this through and union labor is expected to fight it by every means in its power.

It is believed the trials will cover at least a year and that every obstacle will be utilized to block the progress of the state.

After five weeks effort, during which 200 veniremen were examined, a jury has just been completed for trial of the five men whose indictments for murder are being taken up first. The jurors consist of one miner and eleven farmers, two of whom formerly were miners.

Steady Upward Trend Noted in Employment

Washington, Dec. 12.—Twelve of the 14 industries surveyed by the employment service of the department of labor were employing more persons on Nov. 30 than on Oct. 31, and of these 12 the iron and steel industry reported the greatest increase. Liquor and beverages, and stone, clay and glass ware were the only major industries reporting an employment setback in November.

If the 65 cities surveyed, 52 reported employment greater on Nov. 30 than on Oct. 31, these 52 including Detroit, Youngstown, O., Columbus, O., Pittsburgh, Johnstown, Pa., Cleveland, Birmingham, Ala., Indianapolis, Chicago, Buffalo, Milwaukee, Boston, New York, Baltimore and Reading, Pa. The cities reporting a decrease in November included Toledo and Dayton, O., Seattle and Atlanta. The employment service observes: "All manifestations point to a steady upward trend in employment. The mounting increases of the past 12 months give substantial evidence of permanency."

The Holmes Automobile Co., Canton, O., in a voluntary bankruptcy petition lists its liabilities at $1,293,415 with assets of $1,136,543.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

SUCCEEDING William Hjorth, the Hjorth Tool Corp. has been incorporated at Jamestown, N. Y. to make pliers, wrenches and hardware specialties. It is capitalized at $75,000 with $33,000 paid in by the three directors and officers who also are all of the stockholders. E. D. Cook, the president, for 20 years was secretary and general manager of the Salisbury Wheel & Axle Co., now the Salisbury Axle Co. He is a director of the Norwalk Auto Parts Co., Norwalk, O., and is associated with the Peru Auto Parts Co., Peru, Ind. W. F. Opdyke, vice president, for 12 years connected with similar lines of manufacture, will have charge of sales. Alvin D. Stitt, secretary and treasurer, for 19 years was general manager of the Falconer Mirror Co., now the Falconer Plate Glass Co., Falconer, near Jamestown and is a director of the Triangle Furniture Co., Jamestown.

* * *

ADDITIONAL contracts taken by the Pittsburgh Electric Furnace Corp., Union Bank building, Pittsburgh, call for a Moore-type furnace each for the foundries of the Pittsburgh Valve, Foundry & Construction Co., Pittsburgh, and the new Blackwood Electric Steel Corp., Parkersburg, W. Va.

* * *

EQUIPMENT costing approximately $100,000 will be installed in the new wire enameling plant of the Dudlo Mfg. Co., Fort Wayne, Ind. The plant is nearing completion. The new addition will provide much needed room for expansion of the business. G. A. Jacobs is general manager of the plant.

* * *

SUGG Bros., Carthage, N. C., machinists, general repair work and acetylene welding, are building a machine shop 40 x 80 feet with 12-foot pitch truss construction roof, sheet metal, asbestos roof and concrete floor. All equipment has been purchased except a portable key-seater and the heating plant.

* * *

DECISION regarding proposed iments in the plant of the Lima Sheet Metal Products Co., Lima, O., probably will be made within 30 days, according to F. G. Moor, general superintendent. The company has been delayed in its plans. Officers of the company are: President, C. L. Ackerman; vice president, A. W. Wheatley; and secretary and treasurer, S. M. Churchill.

* * *

ESTABLISHMENT of an engineering department is announced by the Colonial Iron Works Co., 881 East Sixty-seventh street, Cleveland. The company has secured the services of Julius H. Petrosky, civil engineer, to have charge of the department which will specialize in the detail, design and fabrication of steel, a field in which he has had a broad training.

* * *

TELEPHONE poles, crossarms, brackets, braces, pins, guy wire, anchors and similar transmission line materials will be manufactured at Chippewa Falls, Wis., by the Northern Supply Co., which has been incorporated with $50,000 capital by J. M. Bischel, formerly in the same line of business at Baltimore. A 2-story factory, 45 x 125 feet, is under construction and will be ready about Jan. 1. Equipment is now being contracted for.

* * *

WISCONSIN Steel & Deck Co., Milwaukee, is the name of a new corporation which has been granted a charter to conduct a general drydock, shipbuilding, marine construction and repair business. The main yards will be at Kewaunee, Wis., where a dock and plant was established during the war but has since been idle. A branch yard and repair dock will be opened in Milwaukee, which will also be general headquarters. A. E. Schunk, Louis Hoffman and F. W. Stevens are interested.

* * *

WORK has started on the construction of a new factory at Hudson, N. Y., for the V & O Press Co., Glendale, Long Island, N. Y., which expects to move into the new quarters about May 1, 1923. The company, which designs and manufactures presses, dies and special machinery, making a specialty of sheet metal working machinery, will have improved and increased facilities for broader scope of its operations in the new plant, according to Edward Cairns, secretary.

* * *

PLANS are being drawn by Martin Tullgren & Sons, 425 East Water street, Milwaukee, architects, for a $200,000 machine shop and general manufacturing plant and warehouse for the Creamery Package Mfg. Co., West Division street and North Kastner avenue, Chicago. It will be 165 x 265 feet, 3-story, of brick and reinforced concrete, with steel trusses and sash.

* * *

STEEL and wood filing cabinets with a unique keyboard device for selection of cards or files, the invention of J. E. Lederman of Chicago, will be manufactured by the Filedex Corp. of America, a new Wisconsin corporation formed at Green Bay, Wis., with $300,000 capital. Mr. Lederman, formerly factory manager of the Addressograph Co. and later with the Hess Ball Bearing Co. and the International Register Co., has taken the position of general works manager and as now buying machinery and other tools. The plant is being established in the plant erected by local business men for the defunct Lawson Airplane Co. at Green Bay. E. H. Mayhew, formerly of the Woodstock Typewriter Co., Chicago, has been elected president of the company.

* * *

REBUILDING of the plant of the Monessen Foundry & Machine Co., Monessen, Pa., is under way, following a fire which recently destroyed three pattern storehouses and the core room. The operating end of the business was not damaged. The new pattern shop already is completed and ready for operation. The Pittsburgh Bridge & Iron Works has taken a contract to erect an all steel building 32 x 100 feet to be used as a core room equipped with one 10-ton traveling crane. Designs now are being made for a pattern storage building, 50 x 150 feet, three stories and fireproof. While the pattern shop was being rebuilt the company used space in the Pittsburgh Steel Co.'s pattern shop. The Monessen company manufactures iron and brass castings, valve specialties, and tin house equipment.

Machine Tool Demand Is Slow

Users Are Deferring Purchases Until After Jan. 1—Bulk of Orders Confined to Single Machines—Inquiry Rate Is High and Prospective Demand of Size Still Looms—Railroads Are Buying

TRADING in machine tools and shop equipment is of a limited character. Orders of size are few and far between, practically all the business placed during the past 10 days being in single tools. However, inquiry is strong and from present indications, it is apparent a large buying movement is in prospect shortly after the first of the year. In all districts single tool demand is reported as rather brisk and in the aggregate the volume of such orders is large. However, a decline in even this class of orders is looked for the balance of the year.

Railroad inquiries are fair and the latest outstanding list from these interest comes from the Delaware, Lackawanna & Western calling for approximately 22 tools. Orders have been placed during the past few days by the American Locomotive Co., the Pennsylvania, the Southern, the Canadian Pacific, the Canadian National and the Chicago, Burlington & Quincy railroads. The Milwaukee railroad, as yet, has not taken action on its recent inquiry, nor has the Missouri Pacific.

General industrial demand is slow but prospects for larger orders after Jan. 1 are bright. An interesting sale of the past week was that of 580 used tools, which represented the equipment of the Becker Milling Machine Co. and the Whitcomb-Blaisdell Machine Co., which firms recently were taken over by the Reed-Prentice Co. Buyers of more than one machine during the past few days include the Robert Dollar Co., the Burnette Oil Tool Co. and the American Metal Products Co.

Prospective demand comes from industry in general practically all lines having inquiries in the market for at least single tools. It is understood, however, that during the past few days demand for milling machines has fallen off somewhat. In one district the demand for heavier types of equipment is stronger than for the lighter tools. The National Tube Co., the General Electric Co. and a number of other large users, who have had inquiries in the market for some time, are understood to have postponed closing on their needs until after Jan. 1. No additional price advances have been noted but more are expected.

Quickening in Inquiry for Equipment Reported

NEW YORK, Dec. 12.—Orders the past week have been coming through slowly but there appears to be a slight quickening in new inquiry, especially in industrial quarters. The outstanding list, however, is that of the Delaware, Lackawanna & Western railroad, calling for 22 machine tools for its Kingsland, N. J., shops. The list comprises one 48 x 48-inch planer, two heavy duty 30-inch engine lathes; two heavy duty 20-inch engine lathes; one horizontal boring, drill-

Crane Awards and Inquiries of the Week

Orders Placed

One 10-ton, handpower crane for the Koppers Co., Pittsburgh; one 33-foot span, 40-ton electric, for Brown & Lowe, Schenectady, N. Y.; one 96-foot span, 15-ton electric, for Fairbanks-Morse Co., Beloit, Wis.; one 60-foot span, 25-ton, and 45-foot span, 20-ton, electric for the Kaw Boiler Works, Kansas City, Mo., to the Whiting Corp., Harvey, Ill.

One 20-ton locomotive crane for the David Joseph Co., Cincinnati; one 20-ton locomotive crane for the Northwestern Paper Co., Clocquet, Minn., to the Browning Co., Cleveland.

One 20-ton locomotive crane for the Clemmons Logging Co., Melbourne, Wash., to Brown Hoisting Machinery Co.

Six 10-ton traveling cranes for the Cornelia Copper Co., to Pawling & Harnischfeger Co.

One 3-ton special motor controlled bridge crane for the Paraffine Paint Co., Melrose, Cal., to Cyclops Iron Works.

One 10-ton, 1-motor crane for the Sterling Hall of Medicine, Yale university, to Whiting Corp.

Four electric cranes for the Schenectady, N. Y., plant of the American Locomotive Co. to Shaw Electric Crane Works; specifications as follows: two 150-ton, double trolley cranes 75-foot span, and two 20-ton cranes, 71-foot span.

One 20-ton hand power crane for Western Portland Cement Co., to Cyclops Iron Works.

Two 1-ton handpower cranes for the Jewett City Textile Novelty Co., placed through Hartford, Conn., dealer.

One 5-ton electric crane, 17-foot span, for the Edward G. Budd Mfg. Co., Philadelphia, to Niles-Bement-Pond Co.

One 3-ton, purchased by the Koppers Co., from the Alliance Machine Co., Alliance, O., for the Clairton, Pa., by-product coke plant of the Carnegie Steel Co.

Complete monorail system with hoists and transmission cranes, etc., for the Booth & Kelly Lumber Co., Eugene, Oreg., to Milwaukee Electric Crane & Mfg. Co., Milwaukee.

Four or five cranes and several hoists by different manufacturers in the Pittsburgh district to a New York builder; details withheld for the time being.

One 20-ton hand power crane for Weed Lumber Co., Weed, Cal., to Cyclops Iron Works.

Orders Pending

One 40-ton and one 5-ton overhead for Southern California Edison Co.

One 15-ton and two 10-ton hand power cranes and one 20-ton and one 40-ton electric crane for the Magma Copper Co.

One 10-ton crane for Spang, Chalfant & Co., Pittsburgh; bids being taken.

One 3-ton or 5-ton for the Gary Screw & Bolt Co., Gary, Ind.; bids tabulated by the Pittsburgh Screw & Bolt Co., Pittsburgh, now being considered at Gary.

Two pneumatic cranes, 10, 15 or 20-ton for Clairton by-product coke plant of the Carnegie Steel Co.; bids being taken by the Koppers Co., Pittsburgh.

Two 15-ton cranes for the Ohio Pump & Machinery Co., Akron, O.; bids all in.

One 10-ton crane for the Weirton Steel Co., Weirton, W. Va.; bids being taken by the Koppers Co., Pittsburgh.

One 10-ton crane for the Blaw-Knox Co., Pittsburgh; inquiry withdrawn.

One 10-ton crane for the Pittsburgh Knife & Forge Co., Coraopolis, Pa.; specifications being changed.

One 15-ton crane for Aliquippa works, Jones & Laughlin Steel Co., Pittsburgh; bids being taken.

One 5-ton crane for the Westinghouse Electric & Mfg. Co., Homewood plant, Pittsburgh; bids being taken.

Preliminary inquiry out for eight or 10 cranes, including ladle crane, skullcracker crane, stripper crane, etc., Pittsburgh manufacturers' expansion plans in formative stage.

Three 125-ton ladle cranes for Carnegie Steel Co., Duquesne, Pa.; action to be taken this week.

One ladle crane for Heyl & Patterson, Inc., Pittsburgh, for installation in central Ohio, for pig casting purposes.

Several cranes, American Rolling Mill Co., Ashland, Ky.; bids being taken.

Inquiry expected to be issued shortly by the Eastern Steel Castings, Newark, which is to take over business of Bayonne Steel Castings Co., Bayonne, N. J.

ing and milling machine; two vertical drilling machines; one 2-spindle center machine; one 4-inch, 2-spindle center machine; one 500-ton, single end, car wheel press; one turret lathe; drilling machines; one plain milling machine; one double end punch and shear; one steel power bending brake; and two 18-inch portable belt lathes.

Recent orders include a 30-inch lathe for Hansen & Van Winkler Co., Newark, placed with the Niles-Bement-Pond Co., and a motor-driven lathe for the school board of Newark, N. J., awarded the Reed-Prentice Co. The American Locomotive Co. is closing on machine tool equipment for its Schenectady, N. Y., plant. Among orders reported last week as placed by the Pennsylvania railroad, are a number of machine tools awarded the Niles-Bement-Pond Co., including four 48-inch planers, five slotters, a quartering machine, a horizontal boring, milling and drilling machine, and a boring and turning mill. The Southern railroad also has placed some business with this builder, including a piston rod grinder, a quartering machine and a lathe.

Figuring in current sales is a list of some 580 used machine tools recently used in the plants of the Becker Milling Machine Co., Boston, and the Whitcomb-Blaisdell Machine Co., Worcester, Mass. These companies have sold their business to the Reed-Prentice Co., Worcester, Mass., as recently reported. One purchaser of this equipment is the Keystone State Construction Co., New York and Providence, R. I., which closed on an 18-inch lathe, a power hack saw and a tool room grinder. The negotiations were conducted through Allen Ashley, 152 West Forty-second street, who also arranged for the sale of a used 2½-inch boring mill by Pratt & Whitney to the Grant Mfg. & Machinery Co., Bridgeport, Conn. Another purchaser of the Becker equipment is the U. S. Industrial Alcohol Co., Peoria, Ill., which bought a lathe and a shaper.

Current overhead crane inquiry includes one list of 14, another of eight, and still another of six. Some of the cranes involved are handpower. Prices on electric cranes are as low as they have been in nine months, but are showing a stiffening tendency in some quarters. Within the past few days a manufacturer of chain block hoists advanced prices five per cent.

Demand for foundry equipment continues spotty but is somewhat improved as compared with two weeks ago. Sand cutters and sand blast equipment is in better demand and several sizable sales of flasks have been reported. While several purchasers are for fitting out new plants and additions, the bulk of orders is for replacement purposes.

A recent sizable buyer of foundry equipment is the Pennsylvania railroad which has made some purchases presumably for its Altoona shops. Other buyers are the Colvin Foundry Co., Providence, R. I., which closed on a tumbling barrel and the Fisher-Sweeney Bronze Co., Bound Brook, N. J., which is installing a 180-foot crane runway and a monorail hoist, to be built by the Cleveland Crane & Engineering Co.

While the Bound Brook foundry of the Fisher-Sweeney company is just being established, a complete new outfit will not be required. The company, it is said, was able to salvage some equipment from its Hoboken plant which was damaged by fire several weeks ago, and also is installing equipment from its plant in Newark, which now is being merged with the new plant. The Bartlett Hayward Co. recently reported as placing several cranes for its new foundry in Baltimore, bought this equipment from the Chesapeake Iron Works. The cupolas, tumbling barrels, ovens, etc., went to the Whiting Corp.

Equipment Inquiries Are Numerous

CLEVELAND, Dec. 12.—The usual "end of the year" dullness prevails in the local machine tool market. Dealers and manufacturers report orders are few and these limited to single tools. However, inquiries continue fairly numerous and prospective demand after Jan. 1 is large. Numerous inquiries, which have been in the market for some time, have been held up pending the taking of inventory, etc. Practically all the tool buying in this district is being done by automobile and automobile parts manufacturers, although some special machinery builders are buying a little additional equipment.

The special machinery builder, which a week ago was noted as closing on an order for 3500 motors, again is in the market with an inquiry for approximately 300 additional motors. One machinery dealer reports the sale of four Warner & Swasey turret lathes and two hand milling machines, all the tools going to local users. Other dealers report a number of small sales, none of which was outstanding.

While large inquiries are absent from the market here, several dealers report they are almost swamped with single tool requests. One inquiry, which may result in the purchase of quite a few tools is from the Whitehead & Kales Co., River Rouge, Mich., which is understood to be in the market for machine shop equipment including lathes, shapers and a multiple drill, as well as tool and die room equipment. The Cuyahoga Boiler Works, Cleveland, is in the market for a power punch; W. L. Streit, 2336 West Forty-second street, Cleveland, is inquiring for a squaring shears and a bar folder; the Pittsburgh & Lake Erie railroad has a list out for a 42-inch boring mill and a large shaper, while the Automatic Incubator Co., Delaware, O., wants woodworking machinery.

Burlington Railroad Placing Orders

CHICAGO, Dec. 12.—Orders for machine tool equipment are being placed by the Burlington railroad, one lot at a time, sellers being called in to modify their bids where it seems necessary. Part of the list has been purchased and the remainder is being acted on in turn. The entire inquiry probably will be placed shortly. The Milwaukee railroad has not yet acted on its recent inquiry, on which some secondhand equipment is likely to be taken. Other roads have not inquired for tools. Purchases by the Burlington railroad are being made at prices somewhat under the general level of the market.

In general the market is quiet and even needed equipment is not being placed at this time. Considerable inquiry is current, coming more from manufacturers than from users of machinery for jobbing work.

Foundry equipment is being bought rather freely, the Ford Motor Co. placing orders with Henry E. Pridmore for 11 large rollover jolt machines and with the Whiting Corp. for 12 helical geared ladles of 1500 pounds capacity. The General Electric Co. has ordered 25 stripping plate and rockover machines from Henry E. Pridmore. The United States Radiator Corp., Detroit, has bought a 78-inch cupola and William E. Dee, Harvey, Ill., a 48-inch cupola from the Whiting Corp.

Demand Is Being Maintained

TORONTO, Dec. 12.—Dealers and builders report demand for machinery and machine tools is being maintained. Actual sales for the past week or two have been up to the average of the previous few weeks and inquiries are coming forward in sufficient volume to assure a good demand for some time to come. A strong demand exists for machinery and tools for replacement purposes, but these are asked for chiefly in units of one or two. Demand, however, is spread over a wide range of industrial activity. The Canadian National railways closed orders for large lists of equipment for shops at Battle Creek, Moncton and St. Malo and at the present time buying is being done for various other shops spread throughout the Dominion. The Canadian Pacific railway purchased several machines for replacement purposes, but a large list has not yet come out from this source. Automobile manufacturers are inquiring for equipment for delivery early in next year.

The demand for woodworking machinery and general equipment also is showing improvement.

John B. Smith & Sons, 53 Strachan avenue, Toronto, Ont., is asking for a lathe, 24 to 30-inch swing, 8 feet long. Pratt & Shanacy, Midland, Ont. are in the market for a lathe and a bolter. Bids will be received until Jan. 15, by R. C. Desrochers, secretary, the department of public works, Dominion government, Ottawa, Canada, for construction and installation of pumping and other machinery for a drydock at Esquimalt, B. C. The National Meter Co., Ltd., New York, N. Y., has premises at 151 Duchess street, Toronto, Ont., and will install machinery for the manufacture of meters, etc. The Canadian Postel Lock Nut Bolt Co., Ltd., will erect a plant at Collingwood, Ont.

Milling Machine Demand Falls Off

MILWAUKEE, Dec. 12.—Demand for milling machines has slowed up to some extent, although local factories are getting fair inquiries principally from automobile and parts manufacturers and have orders which will keep plants running on the present basis until the end of the year. Otherwise the sale of tools is confined to single machines from a wide variety of sources. The agricultural implement trade is taking some tools, with prospects good for considerable buying early in the coming year. This is replacement business in a large measure as yet, for tractor and farm implement makers are said to have about all the capacity they will need for some time to come even if their business in 1923 should reach the proportions expected of it.

Postpone Closing on Tool Inquiries

BOSTON, Dec. 12.—While used tool transactions showed some improvement during last week, sales of new tools fell off compared with previous weeks. The general impression at present is that most pending transactions now will be held up until after Jan. 1. The General Electric Co. at Lynn, Mass., which has been in the market for some weeks for a long list of tools now definitely announces that buying against this list will not take place until January. This company, however, has a new inquiry out for two horizontal boring machines which are for immediate use and purchase is expected to be made within a few days. A week ago an impression seemed to prevail among machine tool interests that manufacturers, anticipating the government tax on surplus, would hurry into the market for needed equipment. Evidently the proposed tax is not taken seriously for practically no buying from this cause is reported, not only locally, but nationally. Some recent buying on the part of state and city government departments is traceable to a desire to use budget funds before the end of the year. Inquiry is heavy and comes from textile machine manufacturers, railroads, general repair shops, hardware manufacturers, and others. The Boston & Albany railroad is expected to close on a large lathe within the coming week. Prices still tend upward although no important advances have been announced recently. Special used tools have brought exceptionally high prices in recent transactions at Boston.

Equipment Orders Are Scattered

SAN FRANCISCO, Dec. 8.—Trading in the local machine tool market during the month past was not as large as that for the preceding month, and with the approach of inventory time dealers do not expect much improvement. Sales have been scattered and confined to single tools but inquiries have increased. Industrial activity has increased and the situation generally is good and prospects bright.

The Stanard Motor Products Co. placed an order with Berger & Carter Co. for one 16-inch shaper, one lathe, a 15-ton press, and a 20-inch drill press. It also placed two 16-inch lathes with Louis G. Henes. The Great Western Motor Co. placed an order for an automatic screw machine with the Berger & Carter Co. This same company sold a lathe to the Westside Lumber Co. and a milling machine, drill, lathe and a 16-inch shaper to the W. L. Bessolo Co. It is reported the Robert Dollar Co. has closed in the East on four lathes and four 20-inch drill presses. The Herberts Machinery & Supply Co. reports the sale of seven automatics to the Mann Mfg. Co. of San Francisco, two cutter grinders to the C. F. Braun Co., an engine lathe to H. C. Smith of Whittier, and two lathes to H. E. Deavers of Long Beach; a lathe and a radial drill to the Burnette Oil Tool Co., Long Beach; a shaper to the Kawneer Mfg. Co., Berkeley; a planer to the Jefferson High school, Los Angeles; a cylindrical grinding machine and a lathe to the American Aluminum Metal Products Co. of Burbank. The Berkeley board of production placed an order with the same company for an engine lathe and the Visalia High school has ordered one junior lathe and one 14-inch lathe from the same company.

Included among other sales were one geared head engine lathe, one automatic gear shaper, one lathe, four punch presses, one radial drill, one 16-inch x 10-foot geared head lathe, one key-seater, a 16-inch shaper, two universal tool and cutter grinders and one 16-inch x 6-foot lathe.

During the past few weeks several fair crane awards have been made and the trade is optimistic regarding the outlook for next year. One large interest reports sales so far this year have exceeded all previous records, the war years included. Most of the surplus crane equipment on the market has been absorbed and by interests who formerly would not consider the purchase of such equipment.

Orders Include Several for Cranes

PITTSBURGH, Dec. 12.—Several crane and hoist orders as well as a fair number of machine tool transactions have been closed in this district and one or two new inquiries are current. In connection with most crane awards, details are withheld for the time being but four or five are said to be involved. The Pennsylvania railroad which has been purchasing machine tools for its lines east, still has a large number on which to close and this week has issued an inquiry for a 600-ton wheel press for its lines west. One or two other railroad inquiries are out and a fairly large list has been issued by the Westinghouse Electric & Mfg. Co. One for four or five items now is current from the Duquesne Light Co., Pittsburgh, covering two sensitive drills, a riveting machine and a punch and shear, all with motor drive. Many single tool inquiries are current and most of the orders recently placed are for one or two tools each. Sellers note a tendency on the part of users to buy larger units. While for several months small tools have been most popular, equipment appropriations appear to be growing and by Jan. 15 a large buying movement is expected to develop. An inquiry issued by a New Kensington, Pa. user calls for a large double crank geared press.

Sales recently reported here involve a small alligator shear, a 4-inch forging machine for shipment to Canada, a large lathe to Chicago, and a blower for a Columbus, O. foundry. The National Tube Co. has not purchased any additional equipment for Gary, Ind. this week, and it, with other users, are expected now to hold off until after Jan. 1. Dealers generally express the thought that this course will prove costly since further price advances are expected. Now that the contract for its building has been let, the Centre Foundry & Machine Co., Warwood, W. Va., probably will purchase additional equipment. The National Forge & Tool Co., Irvine, Pa., is negotiating and the National Radiator Co., Johnstown, Pa., is said to be in the market for both foundry equipment and other equipment for New Castle, Pa. A small list of tools and woodworking machinery is up for bids until Dec. 14 on equipment wanted for the State penitentiary for the western district of Pennsylvania, Rockview, Center county, Pa.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

East of the Mississippi River

DOTHAN, ALA.—The Dothan Machine Shop plans to rebuild its machine shop recently demaged by fire.

BRIDGEPORT, CONN.—Jenkins Bros plans the erection of a 5-story factory building.

CLINTON, CONN.—Buell Bros. Co. has been incorporated with $25,000 capital stock to engage in a general manufacturing business by William H. Buell and others.

HARTFORD, CONN.—The Simon & Lesner Co. has been incorporated as a sheet metal worker with $15,000 capital by Rubin Simon, Dave Lesner and Israel Fashinsky.

NEW HAVEN, CONN.—The Safety Car Heating & Lighting Co., Dixwell avenue, plans a 1-story addition, 106 x 115 feet.

NEW HAVEN, CONN.—The Economy Bottle Washing Machine Co. has been incorporated with $50,000 capital stock by John E. Ayers and others.

SHELTON, CONN.—The Elltone Co., Inc., has been incorporated to make electrical appliances with $50,000 capital by John H. Elliott, William G. Mahoney, William E. Sullivan and others.

CHICAGO—The Muehlhausen Spring Co plans a 1-story factory building, 100 x 142 feet to cost about $40,000.

CHICAGO—The Golden Rule Cutlery Co., 212 Sheldon street, plans to remodel its plant at a cost of $16,000.

CHICAGO—Milnes Bros., 3453 Prairie avenue, plans a 2-story addition, 45 x 50 feet, to cost about $20,000.

CHICAGO—The Schlarp Carburetor Corp., 2151 Belmont avenue, has been incorporated with $125,000 capital stock by John Schmit, August Schlarp and Arthur Bauer. The company is represented by J. H. Jochum Jr., 1303 Marquette building.

CHICAGO—The American Flange & Mfg. Co., 2949 West Van Buren street, has been incorporated with $25,000 capital stock by Saul Schwartz, Morris Schwartz and W. B. Parish. The company is represented by Julius H. Quasser, 517 Harris Trust building.

CHICAGO—The Brady Conveyors Corp., 4459 South Western boulevard, has been incorporated with $10,000 capital stock by Harry H. Weiss, Max Weiss and Ernest W. Clark. The company is represented by Ernest W. Clark, 11 South La Salle street.

CHICAGO—The Hedges & Divine Zinc Co., 3039 East Ninety-second street, has been incorporated with $30,000 capital stock by M. J. J. Rieck, F. A. Thulin and C. W. Kraft. The company is represented by Hyde, Hennings, Thulin, Westbrook and Watson, 10 South La Salle street.

CICERO, ILL.—The Hurley Machine Co., West Twenty-second street, plans a 1-story addition, 61 x 130 feet, to cost about $35,000.

FT. WAYNE, IND.—The Kunkel Valve Co. plans a 1-story plant building, 75 x 150 feet, to cost about $35,000.

FT. WAYNE, IND.—The Dudlo Mfg. Co. is completing the erection of a wire enameling plant, which will be equipped wth approximately $100,000 of equipment.

KOKOMO, IND.—The Kokomo Steel & Wire Co. has started work on a 1-story plant addition, 90 x 245 feet to cost about $55,000.

LUDLOW, KY.—The plant of the Post-Glover Electric Co. recently was damaged by fire.

PORTLAND, ME.—The Flexo Mfg. Co. has been incorporated with $10,000 capital stock to manufacture scrapers, etc., by Herman W. Willard, and others.

PORTLAND, ME.—The Blaisdell Petroleum Process & Refining Co. has been incorporated with $200,000 capital stock by E. V. Mann, and others.

SKOWHEGAN, ME.—The Somerset Ma-

Grinding Machinery Exports Decline

EXPORTS of grinding machinery during September totaled 1088 *machines valued at* $57,733, *according to figures recently issued by the United States department of commerce bureau of foreign and domestic commerce. This is a decline of* 291 *machines valued at* $22,019 *as compared with exports in August which totaled* 1379 *tools valued at* $79,752. *During September but seven polishing and burnishing machines valued at* $1265 *were exported while* 1081 *grinding and sharpening tools valued at* $56,468 *were shipped abroad.*

Countries	Polishing and burnishing machines Number	Dollars	Sharpening and grinding machines Number	Dollars
Belgium	....	....	2	620
Denmark	....	....	2	84
France	3	716	8	7,318
Germany	....	....	....	....
Hungary	....	....	1	20
Italy	....	....	....	....
Netherlands	....	....	....	....
Norway	....	....	....	....
Spain	....	....	33	1,371
Sweden	....	....	....	....
Switzerland	....	....	....	....
England	....	....	64	13,086
Canada-Maritime Prov	....	....	9	56
Quebec and Ontario	3	446	409	5,977
Prairie Provinces	....	....	25	99
Brit. Col and Yukon	....	....	56	878
Costa Rica	....	....	1	23
Mexico	....	....	24	3,661
Newfoundland and Labrador	....	....	2	1,638
Jamaica	....	....	1	68
Trinidad and Tobago	....	....	1	15
Cuba	1	103	8	301
Argentina	....	....	....	....
Brazil	....	....	3	3,384
Chile	....	....	2	655
Colombia	....	....	....	....
Ecuador	....	....	....	....
Dutch Guiana	....	....	1	42
Uruguay	....	....	....	....
Venezuela	....	....	1	40
British India	....	....	11	376
Ceylon	....	....	24	100
Straits Settlements	....	....	....	....
China	....	....	....	....
Chosen	....	....	....	....
Java and Madura	....	....	....	....
Other Dutch E. Ind.	....	....	....	....
Hongkong	....	....	1	1,521
Japan	....	....	150	11,170
Philippine Islands	....	....	5	19
Siam	....	....	1	53
Australia	....	....	235	3,893
New Zealand	....	....	....	....
British South Africa	....	....	....	....
Total	7	1,265	1,081	56,468

Warehouse Steel Prices

Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Boston	3.065c
Buffalo	3.10c
Chicago	2.80c
Cincinnati	2.95c to 3.10c
Cleveland	2.91c
Detroit	3.00c
New York	3.04c
Philadelphia	3.00c
San Francisco	3.40c
Seattle	3.60c
St. Louis	2.90c
St. Paul	3.05c
Los Angeles	3.50c

IRON BARS

Boston	3.065c
Buffalo	3.10c
Chicago	2.80c
Cincinnati	3.10c
Detroit	3.00c
New York	3.04c
Philadelphia	3.00c
St. Louis	2.90c

SHAPES, STRUCTURAL

Boston	3.165c
Buffalo	3.20c
Chicago	2.90c
Cincinnati	3.05c to 3.20c
Cleveland	3.01c
Detroit	3.10c
New York	3.14c
Philadelphia	3.10c
San Francisco	3.40c
Seattle	3.60c
St. Louis	3.00c
St. Paul	3.15c
Los Angeles	3.60c

PLATES

Boston	3.165c
Boston 3/16-inch	3.04c
Buffalo	3.20c
Chicago	2.90c
Cincinnati	2.95c to 3.20c
Cleveland	3.01c
Detroit	3.10c
New York	3.14c
Philadelphia	3.10c
Philadelphia, ¼-inch	3.30c
San Francisco	3.50c
Seattle	3.60c
St. Louis	3.00c
St. Paul	3.15c
Los Angeles	3.75c

NO. 10 BLUE ANNEALED SHEETS

Boston, ¼-inch	4.15c
Buffalo	4.05c
Chicago	4.00c
Cincinnati	3.75c to 4.00c
Cleveland	3.70c to 3.76c
Detroit	3.95c
New York	4.19c
Philadelphia	3.85c
San Francisco	4.50c
Seattle	4.85c
St. Louis	4.10c
St. Paul	4.25c
Los Angeles	4.70c

NO. 28 BLACK SHEETS

Boston	5.40c
Buffalo	4.85c
Chicago	4.85c
Cincinnati	4.00c
Cleveland	4.40c
Detroit	4.90c
New York	4.80c to 4.90c
Philadelphia	4.60c
San Francisco	6.05c
Seattle	5.85c
St. Louis	4.95c
St. Paul	5.10c
Los Angeles	6.10c

NO. 28 GALVANIZED SHEETS

Boston	6.40c
Buffalo	5.85c
Chicago	5.85c
Cincinnati	5.20c
Cleveland	5.40c
Detroit	5.90c
New York	5.80c to 5.90c
Philadelphia	5.75c
San Francisco	6.90c
Seattle	6.85c
St. Louis	5.95c
Los Angeles	6.90c

BANDS

Boston	4.25c
Buffalo	3.90c
Chicago	3.55c
Cincinnati	3.70c to 3.85c
Cleveland	3.71c
Detroit	3.80c
New York	3.84c
Philadelphia	3.80c
San Francisco	4.05c
Seattle	4.35c
Los Angeles	4.40c

HOOPS

Boston	4.75c
Buffalo	4.10c
Cleveland	3.71c
Detroit	4.20c
New York	4.39c
Philadelphia	4.25c
Seattle	5.00c

COLD ROLLED STEEL

Boston (rounds)	4.00c
Boston (shapes)	4.50c
Buffalo (rounds)	3.95c
Buffalo (shapes)	4.45c
Chicago (rounds)	3.80c
Chicago (shapes)	4.30c
Cincinnati (rounds)	3.75c
Cleveland (rounds)	3.75c
Cleveland (shapes)	4.25c
Detroit (rounds)	3.80c
Detroit (shapes)	4.30c
New York	3.90c
New York (shapes)	4.40c
Philadelphia (rounds)	3.85c
Philadelphia (shapes)	4.35c
San Francisco	5.0oc
Seattle	5.25c
Los Angeles	5.10c

chine Co. has been incorporated with $10,000 capital stock by Oscar Thompson, and others.

BALTIMORE—The American Woodworking Co., Sisson street, plans a 1-story plant building, 70 x 300 feet, to cost about $30,000.

ATTLEBORO, MASS.—The H. & B. Machine Co. plans the erection of a machine shop addition.

BOSTON—Capitalized at $150,000 the Campbell Motor Parts Corp. has been incorporated by Arthur G. Locke and others.

BOSTON—The Economy Last Hinge, Inc., has been incorporated with $250,000 capital stock by Charles J. Martell and others.

BOSTON—The Tate, Fisher & Rice Co. has been incorporated to deal in iron and steel with $5000 capital by Charles B. Tate, Charles E. Rice and Frank S. Fisher.

BOSTON—The American Steam Specialty Co. has been incorporated to make steam apparatus with $75,000 capital by Joseph E. Swendeman, John W. Coughlin and John J. Heffernan, Framingham, Mass.

FRAMINGHAM, MASS.—The R. H. Long Motors Co. has been incorporated to build automobiles with $1,500,000 capital by Richard H. Long, George H. Farrar and Henry M. McLaughlin.

MARLBORO, MASS.—The Marlboro Wire Goods Co., High street, plans a new building.

WORCESTER, MASS.—The Parker Wire Goods Co. plans a building, 120 x 300 feet.

DETROIT—The Michigan Stamping Co., Mack avenue, plans a 1-story addition, 140 x 350 feet.

DETROIT—The Michigan Copper & Brass Co., 5851 West Jefferson street, plans a 1-story addition to cost about $30,000.

MARQUETTE, MICH.—A car repair shop will be built here at a cost of $50,000 by the Lake Superior & Ishpeming railroad.

IRVINGTON, N. J.—Plans have been prepared for a 1-story building, 75 x 100 feet, for the Katchem-Shaw Iron Works, Inc., 487-95 Lyons avenue.

JERSEY CITY, N. J.—The M. W. Kellogg Co., Westside avenue, has plans for a 1-story foundry to cost about $49,000.

JERSEY CITY, N. J.—The paint and blacksmith shops of the Erie railroad here recently were damaged by fire.

NEWARK, N. J.—Erection of a plant is planned by the Wiener Body Co., 252 Academy

NEW BRUNSWICK, N. J.—The plant and equipment of the Simplex Automobile Co. has been purchased by the Crane-Simplex Co., recently incorporated with executive offices at 115 Broadway, New York city, which will equip a plant in Long Island city for resumption of operations in the production of Simplex cars shortly after the first of the year.

HILTON, N. Y.—The Cooper Electric Corp. plans a 1-story power plant at Parma, N. Y., at an estimated cost of $55,000.

NEW YORK—The Magnus Electric Co., Inc., 451 Greenwich street, is enlarging its plant.

NEW YORK—The Borough Park Garage Co., 16 West Thirty-first street, plans a 2-story machine shop to cost about $25,000.

NEW YORK—The Western Electric Co. plans extensions and improvements to its plants at Hawthorne, Ill.

NEW YORK—The Signet Auto Appliance Co. has been incorporated with $60,000 capital stock by H. H. Holmes, J. G. Muth and J. E. Scott. The company is represented by Wallace & Kroyer, 156 Broadway.

OSSINING, N. Y.—The Hudson Wire Co., 62 Water street, has awarded the McClintic-Marshall Co. a contract to erect a 1-story building, 50 x 150 feet, to cost about $25,000.

ROCHESTER, N. Y.—The plant of the Co-Operative Foundry Co. recently was damaged by fire.

TROY, N. Y.—George P. Ide & Co. plans a power house in connection with a plant building, two-stories, 65 x 115 feet.

AKRON, O.—The Miller Rubber Co. will erect two factory buildings, 70 x 105 feet, and 40 x 42 feet.

ALLIANCE, O.—The Machine Steel Casting Co. will build an addition.

CLEVELAND—The Ohio Foundry Co. has increased its capital stock from $75,000 to $1,000,000.

CLEVELAND—The Ohio Steel Co. has a permit to erect a factory building at 601 Clark avenue. It will be 1-story, 163 x 399 feet.

CLEVELAND—The Yoder Mfg. Co. is rebuilding its plant which recently was damaged by fire.

CLEVELAND—The plant of the Collinwood Foundry & Mfg. Co. has been purchased by

Bourne-Fuller Service

includes immediate shipment of all Iron and Steel materials from Cleveland and Cincinnati

Warehouses

If you are not receiving our Stock-list we shall be glad to send it to you regularly upon request.

Upson Works

Open Hearth Steel Bars for special uses. Also a complete line of Bolts and Nuts. Prompt Shipments.

THE
BOURNE-FULLER CO.
Iron, Steel
Pig Iron
Coke

CLEVELAND

New York **Chicago** **Detroit**
San Francisco
Cincinnati

Max Greenhut, president of the L. N. & N. Foundry Co. at a receiver's sale. The plant, which has been closed for about one year, will be re-opened under the name of the Collinwood Foundry Co.

DAYTON, O.—Work has started on a service building for the Dayton Power & Light Co.

IRONTON, O.—The Ohio Refractories Co. has started work on the rebuilding of its plant which recently was damaged by fire.

MARION, O.—Work has started on the erection of a plant here for the Fairfield Engineering Co.

SPRINGFIELD, O.—The Fairbanks Co. plans an addition to its plant.

TOLEDO, O.—The Kerscher Elevator Co. is erecting a plant building, 75 x 150 feet.

WELLSTON, O.—The Wellston Mfg. Co. plans a plant addition.

ZANESVILLE, O.—The Miller Battery & Ignition Co., which recently was incorporated, plans to establish a plant here.

DANVILLE, PA.—Work has started on a plant for the Penn State Steel Co.

ERIE, PA.—The Washington Township Light & Power Co. has been incorporated with $5000 capital stock by Charles M. Patch, A. A. Culbertson and George W. Kuntz, all of this city.

HUNTINGDON, PA.—The Cover Electric Co. plans extensions and improvements to its plant.

JOHNSTOWN, PA.—The National Radiator Co. plans a 1-story foundry building, 30 x 350 feet at New Castle, Pa.

LEWISTOWN, PA.—Addtional property is being purchased here by the American Refractories Co. as a site for a plant.

NEW CASTLE, PA.—The New Castle Electric Co. plans improvements and extensions to its plant.

PARSONS, PA.—The Keystone Tinware Mfg. Co. has been incorporated with $10,000 capital stock by William G. Quigley, 128 Welles avenue; Charles T. Mack, 96 Hillside avenue, Wilkes-Barre, Pa., and Fred I. James, 126 Welles avenue, this city.

PHILADELPHIA—The Kohler Co., Kohler, Wis., has acquired a site here on which it plans a 3-story branch plant.

PHILADELPHIA—A $550,000 factory building will be erected here by Walter F. Hering. According to plans by the Ballinger Co., architect, the proposed structure will be 9-stories. George F. Kayne has the general contract.

PITTSBURGH—The Auto Truck Equipment Co., 7511 Penn avenue, plans a 1-story building, 31 x 100 feet.

PITTSBURGH—The National Metal Products Co., Indianapolis, has acquired a site here on which it plans a branch plant.

PITTSBURGH—The Hydraulic Hoist & Body Co. has been incorporated with $50,000 capital stock by H. R. Dailey, Chicago; David McRoberts, this city, and A. F. Bowden, also of this city.

PITTSBURGH—The Steel City Sheet & Tin Plate Co. has been incorporated with $50,000 capital stock by Herbert B. Jones, 2739 Miles avenue, Dormont, Pa.; John McKelvie, 3406 Schaeffer place, Lebanon, Pa.; and E. W. Brautigan, 4600 Allendale avenue, Detroit.

READING, PA.—The Biehl Wagon & Auto Works, 31 South Fifth street, plans a 2-story plant building, 85 x 200 feet.

SCRANTON, PA.—The Carbondale Township Electric Co. has been incorporated with $5000 capital stock by Duncan T. Campbell, Joseph G. Osterhout and Max F. Henkelman, all of this city.

TACONY, PA.—Contract has been awarded the Pittsburgh-Des Moines Steel Co. for a 1-story plant addition by the Abrasive Co.

YORK, PA.—The Gilbert Wall Paper Co., 728 Linden avenue, plans a 1-story power house.

FLORENCE, S. C.—The Palmetto Light & Power Co. plans extensions and improvements to its plant.

GREAT FALLS, S. C.—An electric power plant will be erected by the Republic Cotton Mills, Inc.

NASHVILLE, TENN.—The Federal Can Co. plans a 1-story addition to cost about $20,000.

NORTH NASHVILLE, TENN.—The Phillips & Buttorff Mfg. Co., 217 Third street, plans a 1-story building, 175 x 300 feet, to cost about $35,000.

NEWPORT NEWS, VA.—The Tractor Cultivators, Inc., Powell building, plans a 1-story plant building, 100 x 100 feet.

CHARLESTON, W. VA.—The Owens Bottle Co., Toledo, O., plans a 1-story addition to its plant here to be 120 x 200 feet and cost about $150,000.

LOGAN, W. VA.—The Kentucky & West

(*Concluded on Page* 1662)

Business Changes

WARREN WEBSTER & CO., Camden, N. J., heating apparatus and systems, announce the opening of an office at 306 Crocker street, Los Angeles, to be operated as a direct branch in charge of R. M. Gunzel, and operation of their office at 171 Second street, San Francisco, as a direct branch in charge of Paul W. Beggs.

* * *

An engineering department has been added by the Colonial Iron Works Co., 881 East Sixty-seventh street, Cleveland, in charge of Julius H. Petrosky.

* * *

Denver offices of the Petroleum Iron Works Co., Sharon, Pa., have been discontinued and T. J. Mullin, in charge, has been transferred to St. Louis. New offices to serve western territory have been opened at 407 Oil Exchange building, Casper, Wyo., in charge of H. S. Dilcher.

New Trade Publications

POWER STATION EQUIPMENT—Belliss & Morcom, Ltd., Birmingham, England, have published an illustrated booklet in which various records made in power station equipment are described.

TRUCK DUMP BODIES—The Lee Trailor & Body Co., Chicago is circulating two folders in which automatic dump bodies for trucks are described and illustrated. Specifications of the various bodies are given. The bodies are illustrated.

EMPLOYMENT SERVICE—R. W. Bixby, Inc., Buffalo, is circulating a 20-page illustrated booklet in which it describes the confidential employment service which it performs between employers and prospective employes. This employment service is for the executive. The booklet is interesting.

ADVERTISING—The William H. Rankin Co., Chicago, is circulating a 16-page booklet containing a treatise by H. A. Groth, treasurer of the company, entitled "How National Advertising Gives You the Benefit of Co-operative Buying." The article appeared in Printers Ink, recently.

FIRE FIGHTING EQUIPMENT—The Grether Fire Equipment Co., Dayton, O., has published a 96-page illustrated booklet in which all kinds of fire fighting equipment and supplies are described and illustrated. The equipment ranges from small searchlights, firemen's clothing, etc., to conveying equipment.

COPPER STEEL—The American Sheet & Tin Plate Co., Pittsburgh, has published a 14-page booklet in which it points out the records achieved by copper steel in the past 10 years. The booklet in entitled, "The Testimony of a Decade." The booklet is illustrated and shows tests conducted by the American Society for Testing Materials.

SEARCHLIGHTS—The Grether Fire Equipment Co., Dayton, O., is circulating a 16-page illustrated booklet in which hand electric searchlights are described and illustrated. These lights are recommended for use by mine officials, in gas plants, oil refineries, ship yards, garages, railroad shops, coal mines, power stations, etc. They are described in detail and specifications are given.

BLOCKS—W. W. Patterson Co., Pittsburgh, has issued a 64-page illustrated catalog in which its line of blocks is described and illustrated. The booklet is devoted to standard wood blocks, oil well blocks and hooks, snatch blocks and weight blocks, built either for use with manila or wire rope. The booklet also shows many special blocks, wire rope slings, steam boat ratchets and contractors tools.

ELECTRIC RAILWAY SYSTEMS—A 27-page illustrated booklet has been published by the General Electric Co., Schenectady, N. Y., in which the principal characteristics of several great rapid transit systems from an electrical engineering viewpoint are presented. The facilities for power production, transformation, transmssion and utilization are outlined briefly for each of the systems in Boston, Chicago, New York and Philadelphia.

A general view of our Open Hearth Floor showing charging end of furnaces

Quality Sheets

AUTOMOBILE SHEETS

Body Stock; Flat Fender and Hood Stock; Cowl Stock; Radiator Casing Stock; Crown Fender Stock.

METAL FURNITURE SHEETS

PICKLED and ANNEALED ENAMELING STOCK

For Vitreous Enameling

STOVE PIPE STOCK and ELBOW STOCK

Uniform Color Blue

MILK CAN STOCK

We solicit your inquiries

MANSFIELD SHEET & TIN PLATE COMPANY

MANSFIELD, OHIO

DISTRICT SALES REPRESENTATIVES

The L. D. Rockwell Co., No. 2 Rector St., New York, N. Y.
Mr. D. B. Corey, 1018 Standard Oil Building, Chicago, Ill.
Mr. Geo. W. House, 1822 Ford Building, Detroit, Mich.
The L. D. Rockwell Co., 1201 National Bank Building, Cleveland, O.
The Maynard French Steel Co., 516 Mercantile Library Bldg., Cincinnati, O.
Walter G. Clark, Inc., 106 N. Third St., St. Louis, Mo.
Walter G. Clark, Inc., 313 American Bank Bldg., Kansas City, Mo.
Mr. C. H. Beach, 617 Merchants Bank Bldg., Indianapolis, Ind.
Mr. A. P. Grenier, 640 Endicott Bldg., St. Paul, Minn.
Mr. Herbert P. Hill, 401 Continental Trust Bldg., Washington, D. C.
Wm. P. Horn Co., 237 Rialto Bldg., San Francisco, Cal.
Wm. P. Horn Co., 301 Kerchoff Bldg., Los Angeles, Cal.
Wm. P. Horn Co., Dekum Building, Portland, Ore.
Wm. P. Horn Co., 1426 L. C. Smith Bldg., Seattle, Wash.
Mr. Edwin Schofield, 45 Jarvis St., Toronto, Ont., Canada.

Virginia Power Co. plans to rebuild its power plant which recently was damaged by fire.

WHEELING, W. VA.—Purchasers of property on Seventeenth street, opposite the Baltimore & Ohio freight yards, through Attorney Joseph Handlan, are said to be planning to utilize it as a site for a machine and boiler shop.

CEDARBURG, WIS.—The National Construction Co., 490 Virginia street, Milwaukee, has taken the contract to erect the new plant of the Hansen Canning Machinery Co., at Cedarburg. It will be 112 x 120 feet, one story and part basement, and cost about $90,000.

CRANDON, WIS.—A sawmill, planing mill and warehouse will be established here next spring by Forest H. Hines. The main mill will be 54 x 150 feet. Part of the equipment will be used machinery.

MILWAUKEE—A garage and repair shop, 40 x 72 x 92 feet, will be built at Ninth avenue and Mitchell street by the South Side Nash Co.

MILWAUKEE—The general contract for building a 2-story addition, 45 x 112 feet, for the Milwaukee Gas Specialty Co. at 2017-2023 Clybourn street, has been let to Henry Danischefsky, 1484 Humboldt boulevard. The company makes cigar lighters, gas stoves, stove lighters and other gas appliances. H. E. Toelle is secretary and treasurer.

NEENAH, WIS.—C. R. Meyer & Sons, Oshkosh contractors, have started work on a paper mill addition for the Kimberly-Clark Co. here. It will cost about $110,000 complete.

SHEBOYGAN, WIS.—Contracts have been let by the Vollrath Co. for an addition to its annealing building. The company manufactures metal stampings, enameled kitchen and nursery utensils.

WAUPACA, WIS.—A hydro-electric plant costing about $20,000 will be built at Lindsay by the Lindsay Light & Power Co.

Iron and Steel Prices

Iron Ore

LAKE SUPERIOR ORES
Per Gross Ton Lower Lake Ports

Old range Bessemer, 55 per cent iron	$5.95
Mesabi Bessemer, 55 per cent iron	5.70
Old Range nonbessemer, 51½ per cent iron	5.20
Mesabi nonbessemer, 51½ per cent iron	5.05

EASTERN LOCAL ORES
Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 53 to 63 per cent	9.50 to 10.50

FOREIGN IRON ORE
Cents per unit, c.i.f. Atlantic ports.

Spanish low phosphorus, 52 to 54 per cent	9.00 to 10.00
Algerian low phosphorus, 52 to 54 per cent	10.00 to 11.00
Swedish and Norwegian low phosphorus, 68 per cent	11.00 to 11.50
Swedish foundry or basic, 68 per cent	9.00 to 9.50
Spanish foundry or basic, 52 to 54 per cent	8.00 to 9.00

Manganese Ore

Brazilian, minimum 47 per cent c.i.f. Atlantic ports, 29 cents per unit, nominal. (Equivalent to $24.67 per gross ton or 51.4 cents per unit, duty paid, tidewater.)

Indian 48 to 50 per cent c.i.f. Atlantic ports, nominal.

Caucasian, 52 per cent, c.i.f. Atlantic ports, nominal.

Fluor Spar

85 and 5% grade

Washed gravel, Kentucky and Illinois mines, per ton	$21.50

Rivets

Structural rivets, Pittsburgh	3.00c
Boiler rivets, Pittsburgh	3.10c
Rivets, ⅞-inch and smaller	65 and 5 off

Nuts and Bolts

NUTS
(Up to 1¼ and 1⅛ inches inclusive)

Hot pressed square or hexagon blank or tapped	$3.25 to $3.50 off list
Cold punched square or hexagon blank or tapped	$3.25 to $3.50 off list
Cold punched semifinished hexagon nuts ⅜-inch and larger	70-10-2½ off
Cold punched semifinished hexagon nuts ⅞-inch and smaller	70-10-5 off
Case hardened, finished, hexagon	65-5 off

Price f.o.b. Pittsburgh, Packages of 50.

CARRIAGE BOLTS
¾ x 6 inches, smaller and shorter

Rolled thread	50-10-5 off
Cut thread	50 off
Larger and longer	50 off

MACHINE BOLTS
(¾ x 4 inches, hot pressed nuts)

Rolled thread	60-5 off
Cut thread	50-10 off
Larger and longer	50-10 off

(¾ x 4 inches, cold punched nuts)

Cut thread	45 off
Larger and longer	45 off
Lag screws	50-10 to 60-5 off
Plow bolts Nos. 1, 2 and 3 heads	50-5 off
Tap bolts	30 off
Bolt ends with hot pressed nuts	50-10 off
Bolt ends with cold punched nuts	45 off
Blank bolts	50-10 off
Rough stud bolts with nuts	45 off

WASHERS

Wrought washers	$5.75 off list

Steel Pipe

Pittsburgh basing discounts, jobbers, carloads

	Black	Galvanized
Butt Weld		
⅛-inch	49	23½
¼ and ⅜-inch	55	29½
½-inch	60	46½
¾-inch	64	52½
1 to 3-inch	66	54½
Lap Weld		
2-inch	59	47½
2½ to 6-inch	63	51½
7 to 8-inch	60	47½
9 to 12-inch	59	46½
REAMED AND DRIFTED		
Butt Weld		
1 to 3-inch	64	52½
Lap Weld		
2-inch	57	45½
2½ to 6-inch	61	49½
EXTRA STRONG—PLAIN ENDS		
Butt Weld		
⅛-inch	45	28½
¼ and ⅜-inch	51	34½
½-inch	57	46½
¾-inch	62	51½
1 to 1½-inch	64	53½
2 to 3-inch	65	54½
Lap Weld		
2-inch	57	46½
2½ to 4-inch	61	50½
4½ to 6-inch	60	49½
7 to 8-inch	56	43½
9 to 12-inch	50	37½
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	46	36½
¾ to 1½-inch	49	39½
2 to 2½-inch	51	41½
Lap Weld		
2-inch	45	36½
2½ to 4-inch	47	38½
4½ to 6-inch	46	37½
7 to 8-inch	42	29½

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers, carloads

	Black	Galvanized
THREADS AND COUPLINGS		
Butt Weld		
¼ and ⅜-inch	+ 7	+33
½-inch	26	8
¾-inch	32	17
1 to 1½-inch	34	19
Lap Weld		
1¼ and 1½-inch	Upon application	
2-inch	29	15
2½ to 6-inch	32	19
7 to 12-inch	30	17
PLUGGED AND REAMED		
Two points less than above		
EXTRA STRONG, PLAIN ENDS		
Butt Weld		
¼ and ⅜-inch	+15	+48
½-inch	25	13
¾-inch	32	18
1 to 1½-inch	34	20
Lap Weld		
2-inch	30	17
2½ to 4-inch	33	21
4½ to 6-inch	32	20
7 to 8-inch	25	13
9 to 12-inch	20	8

DOUBLE EXTRA STRONG

Butt Weld		
½-inch	+37½	+49½
¾-inch	+18	+30
1-inch	+34	+46
1¼-inch	+18	+30
1½-inch	+17	+29
Lap Weld		
2 and 2½-inch	+ 3	+15
3 to 4-inch	2	+ 7
4½ to 6-inch	1	+ 7
8-inch	+ 4	+ 8

Boiler Tubes

L. C. L. discounts. C. L. 4 points larger

STEEL

1¼-inch	17½ to 9½ off
2 and 2¼-inch	32 to 24 off
2½ to 3-inch	43 to 35 off
3¼ to 4-inch	48 to 40 off

CHARCOAL IRON

1½-inch	+16
1¾-inch	+ 6
2 and 2¼-inch	4
2½ to 3-inch	9
3¼ to 4½-inch	11

SEAMLESS COLD DRAWN

1-inch	51
1¼ and 1½-inch	43
1¾-inch	27
2 and 2¼-inch	30
2½ and 2¾-inch	34
3-inch	38
3¼ to 4-inch	43
4½ and 5-inch	35

SEAMLESS HOT ROLLED

3-inch	40
3¼ to 4-inch	45

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add $8 per net ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts

Carbon, 0.10 to 0.20 per cent	85 off
Carbon, 0.30 to 0.40 per cent	83 off
Carbon, 0.40 to 0.50 per cent	82 off

Plus usual differentials and extras for cutting.

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Net prices per foot, f.o.b. Pittsburgh

Outside diameter	Gage	Price
2-inch	12-gage	14c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	19c
3-inch	7-gage	34c
1½-inch	9-gage	13¾c
5½-inch	9-gage	53c
5½-inch	9-gage	55c

Plus usual extras for forming and for long lengths.

365-pound bearing casting for a heavy-duty power shovel, Sivyer-made to reduce machining costs.

When Dull Tools Recommend Better Castings

CERTAIN planing and boring tools in the plant of a manufacturer of mining machinery required an unusual amount of grinding and replacement. Sand and slag on the surface of a certain transmission casting dulled them rapidly. The entire machining cost was investigated and proved to be unduly high. The manufacturer's usual sources of supply could not get rid of the trouble; so he came to Sivyer. The Sivyer castings eliminated the unusual wear on the tools and cut machining time per casting by one hour. Tools are keen inspectors of castings and originate many of the orders that come to Sivyer from more than a thousand miles away.

SIVYER (S) CASTINGS

DEPENDABLE

Made clean and sound by intelligent molding methods

Before it was made in Sivyer Steel, the casting shown above dulled machining tools quickly because they encountered sand and slag in the surface on which they worked; in addition holes and pits were revealed after partial machining, so that rejections from this cause were high.

The manufacturer finally came to Sivyer with his problems.

We found that the sand and slag in the machined surface were due to the pattern design and method of molding. A few simple changes, which enabled us to substitute, drag for cope and cope for drag, produced castings with clean, smooth surface, free from sand and slag.

To eliminate the holes and pits, we devised a new method of heading and gating.

The resulting castings did away with frequent sharpenings and replacements of tools. Their interior integrity eliminated the rejections formerly caused by holes and pits. And their generally superior quality shortened the machining time per casting by one hour.

Send Blue Prints

If your cost sheets, tools, or rejections indicate unduly high machining costs for some of your steel parts, whether castings or forgings, send us your blue prints with an explanation of your difficulties. We will study the problems involved and recommend possible solutions without obligation on your part.

SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE

Iron and Steel Production

Compiled By IRON TRADE REVIEW

Pig Iron

	-Stacks- No.	In	Output Total	Av. daily
1907				
January	376	311	2,174,801	69,509
February	374	308	2,047,036	73,109
March	377	304	2,186,709	70,539
April	378	327	2,226,708	74,223
May	391	329	2,291,030	73,904
June	392	341	2,237,420	74,580
July	396	335	2,253,243	72,685
August	397	329	2,243,656	72,376
September	399	329	2,174,148	72,471
October	401	314	2,359,690	76,119
November	398	226	1,820,558	60,685
December	398	154	1,234,733	39,830
Total			25,299,732	
1908				
January	398	139	1,081,813	34,316
February	401	150	1,086,809	37,476
March	398	154	1,229,856	39,672
April	398	146	1,155,122	38,504
May	396	145	1,168,002	37,677
June	395	154	1,106,300	36,876
July	397	166	1,228,604	39,632
August	399	181	1,366,019	44,065
September	399	189	1,416,252	47,208
October	400	200	1,573,824	50,764
November	402	212	1,582,314	52,744
December	403	221	1,723,664	55,602
Total			15,680,140	
1909				
January	406	234	1,787,473	57,683
February	407	233	1,682,470	60,088
March	406	229	1,822,024	58,793
April	406	224	1,731,406	57,687
May	407	236	1,866,757	60,218
June	408	240	1,929,929	64,334
July	409	258	2,088,620	67,375
August	412	278	2,232,642	72,021
September	413	297	2,378,655	79,186
October	413	309	2,589,681	84,001
November	414	311	2,532,740	84,425
December	416	314	2,682,702	86,539
Total			25,337,002	
1910				
January	416	311	2,599,995	83,871
February	417	311	2,429,525	86,747
March	417	310	2,588,736	83,580
April	418	291	2,477,700	82,590
May	421	206	1,871,388	60,367
June	420	271	2,288,279	76,276
July	420	254	2,158,124	69,617
August	422	244	2,103,793	67,864
September	420	234	2,048,461	68,282
October	421	230	2,086,205	67,297
November	421	218	1,910,385	63,679
December	421	193	1,779,899	57,192
Total			26,840,314	
1911				
January	421	210	1,766,658	56,985
February	421	226	1,781,285	63,617
March	421	236	2,165,764	69,867
April	421	220	2,044,904	68,163
May	421	206	1,871,388	60,367
June	421	202	1,773,282	59,109
July	423	196	1,776,108	57,294
August	423	206	1,921,832	61,995
September	423	216	1,973,918	65,797
October	421	214	2,092,061	67,486
November	421	214	1,999,100	66,637
December	422	215	2,032,301	65,558
Total			23,198,601	
1912				
January	421	227	2,052,806	66,220
February	422	235	2,098,796	72,372
March	420	237	2,411,529	77,791
April	421	239	2,377,621	79,254
May	423	243	2,503,341	80,753
June	424	242	2,433,737	81,125
July	422	245	2,402,567	77,502
August	423	255	2,500,163	80,650
September	419	262	2,444,454	81,482
October	422	280	2,683,645	86,569
November	423	289	2,639,562	87,985
December	423	291	2,777,292	89,590
Total			29,325,513	
1913				
January	423	297	2,287,800	89,929
February	423	306	2,778,670	92,095
March	423	278	2,562,823	89,123
April	421	297	2,754,353	91,812
May	421	285	2,716,825	90,865
June	422	283	2,816,883	87,229
July	422	264	2,658,275	82,525
August	424	260	2,537,918	81,839
September	425	258	2,594,098	83,137
October	425	244	2,439,924	81,933
November	424	225	2,529,960	74,322
December	424	191	1,976,138	63,746
Total			30,652,767	
1914				
January	423	199	1,879,336	60,624
February	423	219	1,888,607	67,450
March	423	232	2,341,551	75,534
April	422	212	2,261,501	75,383
May	422	198	2,097,019	67,646
June	422	193	1,904,566	63,486
July	422	187	1,955,324	63,075
August	422	187	1,996,483	64,403
September	422	180	1,882,718	62,757
October	422	162	1,767,227	57,007
November	421	150	1,501,269	50,042
December	421	154	1,495,325	48,236
Total			22,970,926	
1915				
January	421	165	1,591,324	51,323
February	421	179	1,666,592	59,521
March	421	190	2,046,280	66,009
April	421	197	2,114,516	70,484
May	421	207	2,255,157	72,747
June	421	221	2,369,932	78,998
July	421	234	2,563,311	82,687
August	421	246	2,774,825	89,510
September	420	266	2,834,342	94,478
October	420	276	3,120,340	100,656
November	421	285	3,035,235	101,174
December	421	295	3,201,605	103,278
Total			29,573,161	
1916				
January	421	304	3,171,878	102,319
February	421	312	3,078,548	106,157
March	422	315	3,327,630	107,343
April	422	320	3,225,496	107,517
May	423	321	3,364,584	108,535
June	423	325	3,213,818	107,127
July	419	316	3,221,127	103,907
August	419	317	3,197,838	103,156
September	419	326	3,208,041	106,935
October	419	328	3,508,180	113,167
November	420	322	3,317,805	110,593
December	422	309	3,184,178	102,715
Total			39,019,123	
1917				
January	422	310	3,159,839	101,930
February	422	317	2,649,935	94,641
March	423	331	3,255,813	105,026
April	425	333	3,328,061	110,936
May	425	340	3,413,677	110,119
June	427	347	3,260,234	108,675
July	429	351	3,337,442	107,659
August	431	355	3,238,970	104,483
September	431	344	3,140,742	104,691
October	433	354	3,296,286	106,332
November	434	344	3,198,597	106,620
December	435	321	2,885,380	93,077
Total			38,164,976	
1918				
January	435	294	2,403,227	77,523
February	435	319	2,318,242	82,794
March	438	338	3,209,996	103,548
April	437	351	3,273,355	109,112
May	437	360	3,451,884	111,351
June	437	353	3,316,148	110,538
July	437	364	3,408,584	109,954
August	439	371	3,378,479	108,983
September	438	364	3,413,223	113,774
October	437	364	3,482,392	112,335
November	437	360	3,347,844	111,595
December	435	351	3,434,114	110,602
Total			38,437,488	
1919				
January	435	330	3,306,279	106,654
February	435	311	2,943,347	105,270
March	435	279	3,088,023	99,614
April	435	216	2,474,374	82,479
May	433	197	2,107,729	67,991
June	433	199	2,114,028	70,467
July	434	240	2,424,212	78,200
August	432	266	2,742,081	88,453
September	433	163	2,480,790	82,692
October	432	216	1,864,424	60,142
November	432	252	2,407,369	80,244
December	432	262	2,626,074	84,711
Total			30,578,730	
1920				
January	432	285	3,012,373	97,172
February	432	305	2,984,257	102,904
March	433	315	3,375,768	108,895
April	433	278	2,752,670	91,754
May	433	297	2,991,825	96,510
June	433	302	3,046,623	101,553
July	434	291	3,043,918	98,190
August	434	306	3,145,536	101,168
September	434	317	3,124,308	104,173
October	435	290	3,288,341	106,075
November	435	255	2,935,081	97,836
December	435	202	2,700,268	87,105
Total			36,400,968	
1921				
January	436	184	2,414,753	77,895
February	436	155	1,927,088	68,906
March	436	103	1,593,542	51,447
April	436	96	1,190,751	39,691
May	436	90	1,215,272	39,202
June	436	74	1,064,007	35,466
July	435	69	864,642	27,892
August	435	69	954,901	30,802
September	435	84	985,795	32,857
October	435	95	1,234,450	39,821
November	429	120	1,414,958	47,165
December	429	123	1,642,775	52,992
Total			16,506,564	
1922				
January	430	127	1,545,804	53,090
February	429	139	1,630,180	58,220
March	429	155	2,034,784	65,638
April	429	161	2,070,161	69,005
May	427	175	2,309,348	74,495
June	427	191	2,362,453	78,748
July	427	170	2,403,030	77,517
August	427	143	1,810,665	58,408
September	427	189	2,024,008	67,466
October	428	218	2,629,655	84,827
November	428	240	2,845,595	94,853

Ingots and Castings

By American Iron and Steel Institute

	Ingots	Castings	Total
1910	25,154,087	940,832	26,094,919
1911	23,029,479	646,627	23,676,106
1912	30,284,682	966,621	31,251,303
1913	30,280,130	1,020,744	31,300,874
1914	22,819,784	693,246	23,513,030
1915	31,284,212	866,824	32,151,036
1916	41,401,917	1,371,763	42,773,680
1917	43,619,200	1,441,407	45,060,607
1918	43,051,022	1,411,410	44,462,432
1919	33,694,795	976,437	34,671,232
1920	40,881,392	1,251,542	42,132,934
1921	19,184,084	559,713	19,743,797

Monthly Ingot Output

Gross Tons

1922	87.5 per cent of capacity	Indicated total
January	1,593,482	1,820,000
February	1,745,022	1,995,000
March	2,370,751	2,710,000
April	2,444,513	2,800,000
May	2,711,141	3,100,000
June	2,634,477	3,010,000
July	2,487,104	2,840,000
August	2,214,582	2,530,000
September	2,373,779	2,710,000
October	2,872,415	3,280,000
November	2,889,297	3,300,000

Vol. VI JANUARY 18, 1922 No 1
MID-MONTH
REVIEW OF BUSINESS
A SURVEY OF CONDITIONS
IN TRADE AND INDUSTRY
IRVING NATIONAL BANK
WOOLWORTH BUILDING NEW YORK
CONDITIONS IN IRON AND STEEL.— The Iron Trade Review compiles weekly an index figure representing the market average of fourteen representative iron and steel products in several different domestic markets. An almost uninterrupted decline was shown by this index from week to week throughout 1921, the highest point being $52.75 on January 5; the lowest point thus far recorded since was $33.54 on January 11, 1922. In January, 1913, the average was $27.96. Reductions in railroad freight

Many prominent banks issuing publications at regular intervals quote Iron Trade Review extensively in referring to conditions in the iron and steel market. The Irving National Bank, New York, is one of the most favorably known banking institutions in the United States.

400 Newspapers Regularly Quote

IRON TRADE REVIEW

CLEVELAND

The international reputation and the World-wide circulation of the IRON TRADE REVIEW is the result of year after year of unfailing Editorial accuracy and reliability.

PROOF—

THE IRON TRADE REVIEW

"The Most Widely Quoted Trade Paper In The World"

Iron and Steel Scrap Prices

CORRECTED TO TUESDAY NOON GROSS TONS DELIVERED TO CONSUMER

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	$13.50 to 15.00
Boston (dealers)	14.00 to 14.50
Chicago	16.75 to 17.25
Buffalo	19.00 to 19.50
Cincinnati	16.50 to 17.00
Cleveland	18.00 to 18.50
Detroit (dealers)	16.00 to 16.50
Eastern Pennsylvania	16.00 to 16.50
New York (dealers)	12.00 to 12.50
Pittsburgh	20.00 to 20.50
San Francisco	12.50 to 13.00
St. Louis	15.50 to 16.00
Valleys	20.50 to 21.00
No. 1 railroad steel New York (dealers)	12.75 to 13.25

BUNDLED SHEETS

Buffalo	$14.00 to 15.00
Cleveland	12.50 to 13.00
Cincinnati	12.00 to 12.50
Eastern Pennsylvania	14.50 to 15.00
Pittsburgh	17.50 to 18.00
St. Louis	9.50 to 10.00
Valleys	16.00 to 16.50

STEEL RAILS, SHORT

Birmingham	$14.00 to 15.00
Boston (dealers)	14.00 to 14.50
Chicago	19.00 to 19.50
Cincinnati	19.00 to 20.00
Cleveland	16.25 to 17.00
St. Louis	19.00 to 19.50

STOVE PLATE

Birmingham	$14.50 to 15.00
Boston (consumers)	16.00 to 17.00
Buffalo	17.00 to 18.00
Chicago	18.00 to 18.50
Cincinnati (net)	14.00 to 15.00
Cleveland	17.00 to 17.75
Detroit (net ton) (dealers)	13.00 to 13.50
Eastern Pennsylvania	16.00 to 17.00
New York (dealers)	12.50 to 13.50
Pittsburgh	16.50 to 17.00
St. Louis	15.50 to 16.00

LOW PHOSPHORUS

Buffalo	$21.00 to 22.00
Cincinnati	18.00 to 18.50
Eastern Pennsylvania	22.00 to 23.00
Pitts. billet and bloom crops	24.00 to 25.00

SHOVELING STEEL

Chicago	$16.50 to 16.75
Pittsburgh	17.00 to 17.50
St. Louis	15.00 to 15.50

KNUCKLES, COUPLERS & SPRINGS

Chicago	$22.00 to 22.50
Eastern Pennsylvania	21.00 to 22.00
Pittsburgh	21.50 to 22.00
St. Louis	21.50 to 22.00

COMPRESSED SHEETS

Buffalo	$16.50 to 17.00
Chicago	13.75 to 14.25
Pittsburgh	19.00 to 19.50
Cleveland	16.00 to 16.50
Detroit (dealers)	15.00 to 15.50
Valleys	19.00 to 19.50

FROGS, SWITCHES, GUARDS

Chicago	$16.75 to 17.25
Eastern Pennsylvania	16.00 to 16.50
St. Louis	16.00 to 16.50

BOILER PLATE, CUT

St. Louis (dealers)	$10.50 to 11.00

ANGLE BARS—STEEL

Chicago	$18.00 to 18.50
St. Louis	17.00 to 17.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	$15.00 to 15.50
Boston (dealers)	14.00 to 14.50
Buffalo	19.00 to 19.50
Chicago, No. 1	17.00 to 17.50
Chicago, No. 2	16.75 to 17.25
Cincinnati, No. 1	14.50 to 15.50
Cleveland, No. 1	12.00 to 12.25
Eastern Pennsylvania, No. 1	18.50 to 19.00
Pittsburgh, No. 1	18.00 to 19.00
Pittsburgh, No. 2	20.00 to 20.50
New York, No. 1 (dealers)	15.50 to 16.00
St. Louis, No. 2	17.00 to 17.50
St. Louis	16.50 to 17.00

WROUGHT PIPE

Boston (dealers)	$9.50 to 10.00
Buffalo	14.00 to 14.50
Eastern Pennsylvania	14.50
New York (dealers)	9.75 to 10.25

YARD WROUGHT

Boston	$13.00 to 13.50
Eastern Pennsylvania, No. 1	17.00 to 18.00

CITY WROUGHT

New York, long	$13.00 to 13.50

BUSHELING

Buffalo, No. 1	$17.00 to 17.50
Chicago, No. 1	15.00 to 15.50
Chicago, No. 2	9.50 to 10.00
Cincinnati, No. 1	14.00 to 15.00
Cleveland, No. 1	14.00 to 14.50
Cleveland, No. 2	12.00 to 12.25
Detroit (dealers)	13.00 to 13.50
Eastern Pennsylvania, No. 1	14.50 to 15.00
Pittsburgh, No. 1	17.00 to 17.50
St. Louis, No. 1	14.50 to 15.00

MACHINE SHOP TURNINGS

Birmingham	$10.00 to 11.00
Boston (dealers)	10.00 to 10.50
Buffalo	15.00 to 16.00
Chicago	9.25 to 10.25
Cleveland	14.75 to 15.25
Cincinnati (net)	11.50 to 12.00
Detroit (dealers)	11.00 to 11.50
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	11.75
Pittsburgh	15.50 to 16.00
St. Louis	10.50 to 11.00
Valleys	16.00 to 16.50

CAST IRON BORINGS

Birmingham (chemical)	$15.00 to 16.00
Birmingham, borings (plain)	10.00 to 10.50
Boston (chemical)	16.00 to 16.50
Boston (dealers)	13.50 to 14.00
Buffalo	16.50 to 17.00
Chicago	14.50 to 15.00
Cincinnati (net)	12.00 to 12.50
Cleveland	16.00 to 16.25
Detroit (dealers)	13.00 to 13.50
Eastern Pennsylvania	15.00 to 16.00
Eastern Pennsylvania (chemical)	20.00 to 22.00
Pittsburgh	17.00 to 17.50
New York (dealers' price)	11.75
St. Louis	12.00 to 12.50
Valleys	17.25 to 17.50

MIXED BORINGS AND TURNINGS
(For blast furnace use)

Boston (dealers)	$10.50 to 11.00
Cleveland, small	15.75 to 16.00
Detroit (dealers)	13.00 to 13.50
Eastern Pennsylvania	14.00 to 14.50
New York (dealers)	11.75

IRON AXLES

Birmingham	$18.00 to 20.00
Boston	27.00 to 28.00
Buffalo	24.00 to 25.00
Chicago	27.00 to 27.50
Cincinnati	23.00 to 24.00
Eastern Pennsylvania	28.00 to 30.00
New York (dealers)	24.00 to 25.00
Pittsburgh	29.00 to 30.00
St. Louis	28.00 to 28.50

IRON RAILS

Buffalo	$19.00 to 20.00
Chicago	22.00 to 22.50
Cincinnati	16.00 to 17.00
Cleveland	18.00 to 18.50
St. Louis	20.50 to 21.00

PIPES AND FLUES

Chicago	$11.00 to 11.50
Cincinnati	11.00 to 12.00
Cleveland	13.00 to 13.50
St. Louis	10.50 to 11.00

RAILROAD GRATE BARS

Buffalo	$16.00 to 17.00
Chicago	17.00 to 17.50
Cleveland	17.00 to 17.75
Eastern Pennsylvania	16.00 to 16.50
New York (dealers)	12.50 to 13.00
St. Louis	16.50 to 17.00

FORGE FLASHINGS

Boston (dealers)	$11.00 to 11.50
Chicago, small	12.00 to 12.50
Cleveland	12.50 to 13.00
Cleveland, large	12.25 to 12.50
Detroit (dealers)	11.50 to 12.00

FORGE SCRAP

Boston	$9.50 to 10.00
Chicago	16.75 to 17.25
Eastern Pennsylvania, No. 1	15.00 to 15.50

ARCH BARS AND TRANSOMS

Chicago	$22.50 to 23.00
St. Louis	21.00 to 21.50

ANGLE BARS—IRON

Chicago	$22.50 to 23.00
St. Louis	21.00 to 21.50

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	$11.50 to 12.00
Buffalo	17.50 to 18.50
Chicago	15.25 to 15.75
Cleveland	17.00 to 17.25
Eastern Pennsylvania	15.00 to 16.00
Pittsburgh	17.50 to 18.00
St. Louis	13.00 to 13.50

STEEL CAR AXLES

Birmingham	$18.00 to 20.00
Boston (dealers)	20.00 to 21.00
Buffalo	21.00 to 22.00
Chicago	19.00 to 19.50
Cleveland	22.00 to 22.50
Eastern Pennsylvania	24.00 to 25.00
New York (dealers)	20.50 to 21.00
Pittsburgh	21.00 to 22.00
St. Louis	20.00 to 20.50

SHAFTING

Boston (dealers)	$20.00 to 21.00
Chicago	21.15 to 22.25
Eastern Pennsylvania	21.00 to 23.00
New York (dealers)	16.00 to 16.50
St. Louis	19.00 to 19.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	$16.00 to 18.00
Birmingham, tram car	16.50 to 18.50
Boston (consumers)	20.00 to 20.50
Buffalo, iron	21.00 to 22.00
Chicago, iron	23.50 to 24.00
Cincinnati	19.00 to 19.50
Eastern Pennsylvania, cupola	20.00 to 21.00
New York, iron (dealers)	21.00 to 22.00
Pittsburgh, iron	21.00 to 22.00
Pittsburgh, steel	21.50 to 22.00
St. Louis, iron	22.50 to 23.00

NO. 1 CAST SCRAP

Birmingham, cupola	$17.50 to 18.50
Boston (consumers)	20.00 to 23.00
Buffalo	21.00 to 22.00
Chicago, cupola	21.50 to 22.00
Cincinnati, No. 1, machinery, cupola (net)	21.00 to 22.00
Cleveland, cupola	20.00 to 21.00
Detroit (net ton) (dealers)	15.00 to 15.50
Eastern Pennsylvania, cupola	20.00 to 21.00
New York, cupola (dealers)	17.50 to 18.25
Pittsburgh, cupola	22.00 to 22.50
San Francisco	25.00 to 26.00
St. Louis, agricultural	18.00 to 18.50
St. Louis, railroad	19.00 to 19.50
Valleys	22.00 to 22.50

HEAVY CAST

Boston (consumers)	$19.50 to 20.00
Buffalo	18.00 to 19.00
Cleveland	16.00 to 16.25
Detroit, automobile (net ton)	18.00 to 18.50
Eastern Pennsylvania	19.00 to 19.50
New York (dealers)	15.50 to 16.00
Pittsburg	18.00 to 18.50

MALLEABLE

Boston (railroad)	$19.50 to 20.00
Buffalo	20.00 to 21.00
Chicago, railroad	22.50 to 23.00
Chicago, agricultural	22.50 to 23.00
Cincinnati, agricultural	17.00 to 18.00
Cincinnati, railroad	17.50 to 18.50
Cleveland, agricultural	18.50 to 19.00
Cleveland, railroad, nominal	20.00 to 20.50
Detroit (dealers)	18.50 to 19.00
Eastern Pennsylvania, railroad	19.00 to 20.00
Pittsburgh, railroad	20.00 to 21.00
Pittsburgh, agricultural	17.00 to 17.50
St. Louis, agricultural	20.00 to 20.50
St. Louis, railroad	20.00 to 20.50

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	$16.00 to 17.00
Boston (dealers)	13.50 to 14.00
Chicago	17.75 to 18.25
Cleveland	20.00 to 20.50
Eastern Pennsylvania	21.00 to 22.00
New York (dealers)	16.00 to 16.50
Pittsburgh district	20.00 to 21.00
St. Louis	17.00 to 17.50

LOCOMOTIVE TIRES

Chicago	$17.00 to 17.50
St. Louis	17.00 to 17.50

LOW PHOSPHORUS PUNCHINGS

Chicago	$18.00 to 18.50
Eastern Pennsylvania	22.00 to 24.00
Pittsburgh	23.00 to 24.00